MoDOT REF

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# Immual Report

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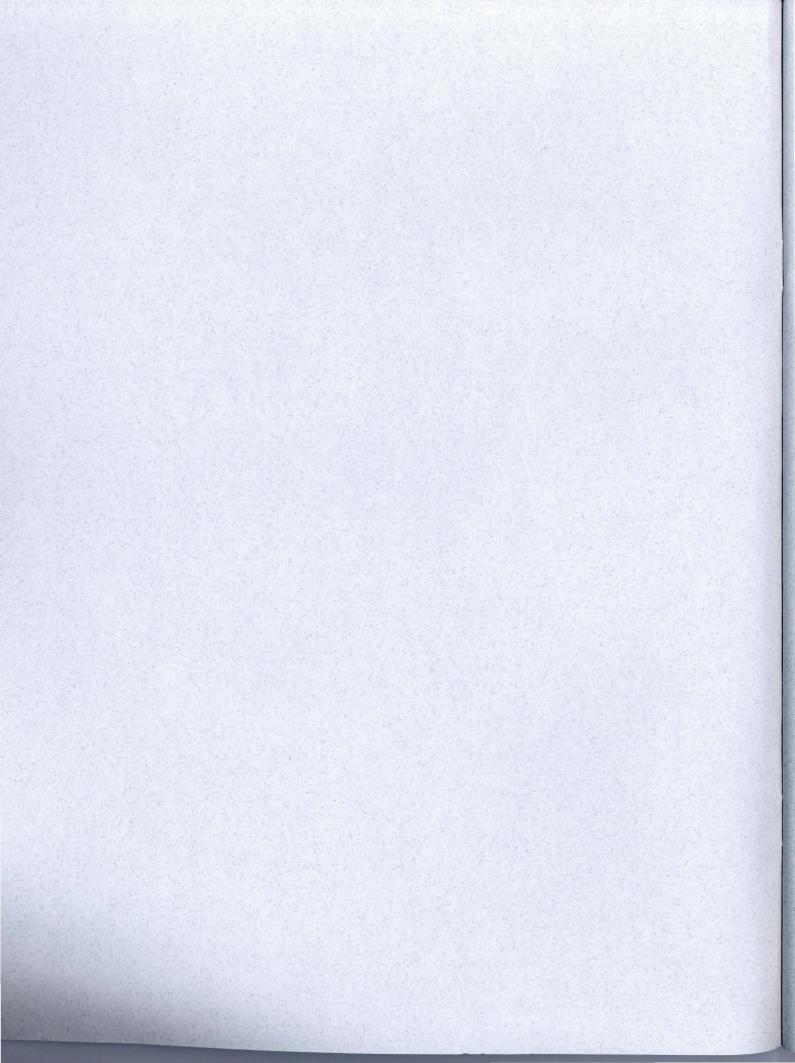
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July 1, 1988 to June 30, 1989



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he Missouri Highway and Transportation Department or MHTD oversees the five

transportation options available for Missourians and visitors — highways, aviation, waterways, transit and railroads. Within its duties, MHTD operates a 32,285-mile highway system, including highway location, design, construction and maintenance.

Besides highways, the department coordinates the four other means of travel by helping develop and improve airports, rail facilities, ports and transit systems. The department administers the state and federal programs and funds available for these modes.

MHTD's current organizational structure became such after voters passed Constitutional Amendment 2 in November 1979 that merged the previously separate Highway and Transportation departments. In January 1980, the departments combined to form MHTD.

The department operates under decentralized organization with a headquarters office in Jefferson City. This office provides staff assistance and functional control for the department's 10 geographical districts. Each district contains about 10 percent of the total road mileage in the state highway system and is under the direction of a district engineer who administers all district activities. District offices are located in St. Joseph, Macon, Hannibal, Kansas City, Jefferson City, Kirkwood, Joplin, Springfield, Willow Springs and Sikeston.

Two headquarters office divisions conduct all state bridge design and highway planning. No district counterparts for these divisions exist; however, decisions about highway construction, maintenance and operations are made at the district level.

The transportation modes of waterways, transit, aviation and railroads are set up as units within the headquarters office that carry out the statewide planning for these modes. There are no district counterparts.

MHTD gains its revenue mainly from motor vehicle fuel taxes, licenses and fees and part of one-half of the motor vehicle sales tax.

Missouri voters approved Proposition A April 7, 1987. This road and bridge improvement program increased the motor fuel tax from 7 to 11 cents per gallon. Prop A included a 10 percent increase in fees for heavy trucks and a spending cap on highway fund appropriations to outside agencies. At this time, the department placed all road and bridge improvements into a 15-year time frame.

During the 1989 legislative session, the Missouri Legislature adopted Senate Bill 186 that changed the annual report to the governor from a calendar year report to a fiscal year report. This annual report reflects the time period of July 1, 1988, to June 30, 1989.

wbo we are, wbat we do

he following table gives summary statistics regarding Missouri's state highway system as of Dec. 31, 1988.

System	Road miles
Interstate	1,159.168
Primary	6,825.744
Supplementary	24,300.293
Total Miles	32,285.205
Туре	Road miles
Granular	0
Low-type bituminous	24,725.077
High-type bituminous	5,4440.604
Concrete	2,119.524
Total miles	32,285.205

# the commission

he Missouri Highway and Transportation Commission is a sixmember, bipartisan governing body for the Missouri Highway and Transportation Department. The governor with the

Department. The governor with the Senate's consent appoints members to staggered, six-year terms on the commission. No more than three commissioners may be of the same political party.

The commission appoints the chief engineer, chief counsel and commission secretary. The chief engineer with commission approval makes all other appointments.

#### Missouri Highway and Transportation commissioners throughout fiscal year 1989

John C. Cozad

Chairman

Helen T. Schnare

Vice Chairman

Paul L. Ebaugh

Member

C.R. Johnston

Member

Harry T. Morley

Member

**Don Walsworth** 

Member

### Missouri Highway and Transportation officials throughout fiscal year 1989

Wayne Muri

Chief Engineer

Walt Vandelicht

Assistant Chief Engineer

Frank Carroll

Assistant to the Chief Engineer

Design

Joe Mickes

Assistant to the Chief Engineer

Operations

Ray McCray

Assistant to the Chief Engineer

Administrative Services

Al Laffoon

**Division Engineer** 

Bridge

**Gary Chullino** 

**Division Engineer** 

Construction

Jim Roberts

**Division Engineer** 

Design

**Don Dietle** 

Director

**Equipment and Procurement** 

the staff

**Bob Drusch** 

Director

Fiscal Services

**Roy Lilley** 

Director

Information Systems

Jack O'Rourke

Director

Internal Review, Audit and Systems

**Roy Coplen** 

**Division Engineer** 

Maintenance and Traffic

**Bill Trimm** 

**Division Engineer** 

Materials and Research

**Tony DeClue** 

Director

Personnel

**Don Hiatte** 

**Division Engineer** 

Planning

**Art Taylor** 

Director

Public Affairs

**Mark Weston** 

Director

Right of Way

Mel Sundermeyer

Director

Transportation

Missouri Highway and Transportation Commission personnel throughout fiscal year 1989

**Rich Tiemeyer** 

Chief Counsel

Mari Ann Winters

Commission Secretary

District 1 Northwest Area 3602 N. Belt Highway P.O. Box 287 St. Joseph, Mo. 64502 (816) 387-2350

District 2 North Central Area U.S. Route 63 P.O. Box 8 Macon, Mo. 63552 (816) 385-3176

District 3 Northeast Area P.O. Box 1067 Hannibal, Mo. 63401 (314) 221-2764

District 4
Kansas City Area
5117 East 31st Street
Kansas City, Mo. 64128
(816) 921-7104

District 5 Central Area 1511 Missouri Blvd. P.O. Box 718 Jefferson City, Mo. 65102 (314) 751-3322 District 6 St. Louis Area 329 S. Kirkwood Road Kirkwood, Mo. 63122 (314) 966-3800

District 7 Southwest Area 410 Range Line Road P.O. Box 1445 Joplin, Mo. 64802 (417) 625-3090

District 8 Springfield Area 3025 East Kearney M.O. Box 868 Springfield, Mo. 65801 (417) 866-3576

District 9
South Central Area
U.S. Business Route 63 North
P.O. Box 220
Willow Springs, Mo. 65793
(417) 469-3134

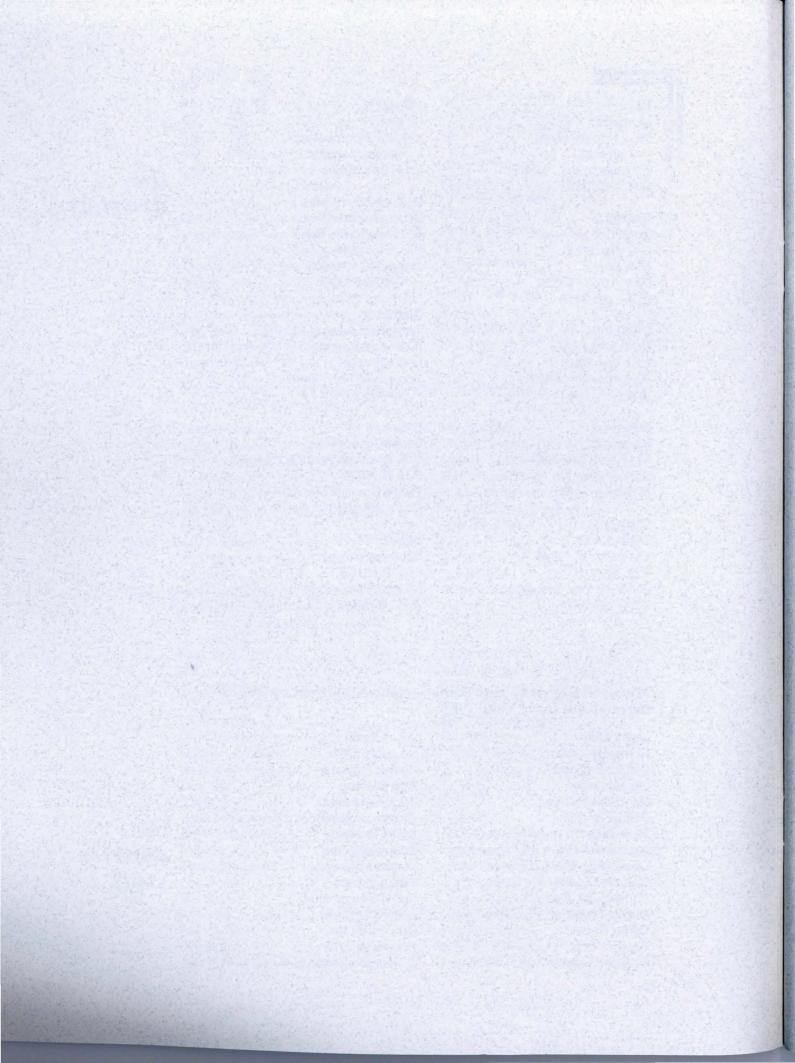
District 10 Southeast Area P.O. Box 160 Sikeston, Mo. 63801 (314) 471-4170 the districts

### Missouri Highway and Transportation district engineers throughout fiscal year 1989

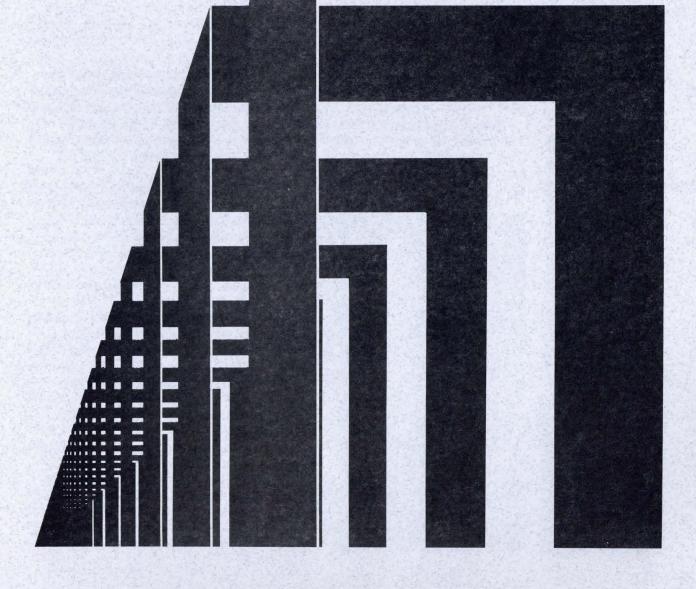
Jiggs Miner
Northwest Area
District Engineer
Jim Jackson
North Central Area
District Engineer
Dick Jones
Northeast Area
District Engineer
Bob Chappell
Kansas City Area
District Engineer
Owen Redel
Central Area
District Engineer

J.T. Yarnell
St. Louis Area
District Engineer
Ken Stalcup
Southwest Area
District Engineer
Willis Graven
Springfield Area
District Engineer
Phil Jackson
South Central Area
District Engineer
Bob Sfreddo
Southeast Area
District Engineer

tbe district staff



# year in review



### adoptions dot missouri's roadsides



ith the excitement the Adopt-A-Highway program has generated in

Missouri during the year, motorists can see many signs on state rights of way praising adopters for their efforts. From border to border, clubfuls of members, families and individuals are stuffing trash into bright yellow bags and helping produce a prettier state.

Through the Adopt-A-Highway program, any person, club or business can adopt a section of highway for litter pick-up, mowing or beautification. Once they've signed up, the department presents adoption papers to the adopters and erects brown and white signs to mark their areas. At the end of fiscal

year 1989, 1,596 groups had joined the program, adopting more than 2,500 miles of roadside.

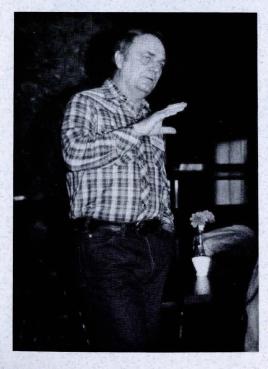
The Adopt-A-Highway program lets Missourians become personnally involved in caring for the environment, but it also helps the department maintain Missouri's roadsides. With nearly 400,000 acres of right of way, this is a monumental task. In calendar year 1988, MHTD spent about \$2.3 million and 133,383 person-hours cleaning up litter statewide.

department improves communication with chats



o team ever won a ballgame without pausing for a talk in the huddle.

With this logic as a guide, 32 District 3 employees met June 28, 1989, with Chief Engineer Wayne Muri to kick off the department's new Chat With the Chief program. MHTD's District 3 is



In 1989, Chief Engineer Wayne Muri initiated a program to improve communication within the department. headquartered in Hannibal.

The department created the Chat program after sending more than 6,000 communication surveys to employees in November 1988. These surveys revealed what employees think about the flow of information through the organization.

The surveys uncovered both positive areas and problem areas within MHTD. Two discoveries were that employees want more opportunity to meet with management and each other, and personal, face-to-face communication was the employees' preferred choice for exchanging information.

Armed with this knowledge, the Chat With the Chief forums were set up. Each month, Chief Engineer Muri visits a district or the Main Office and has a meeting with about 30 employees. These employees represent the different divisions within the district or Main Office.

The Chat With the Chief meetings bring up many themes and issues employees face each day. By talking these through, the department hopes to find solutions and give each employee a better understanding of the department and their role in it.



hat happens under the threat of snow, on a shadeless stretch of asphalt in

100-degree temperatures, in a high wind, in a steady drizzle, in a big town, in a small town or sometimes in no town at all?

No, it's not the mailman making his appointed rounds. The answer is a ground-breaking or a ribbon-cutting ceremony, and the department has held many such events throughout the past year.

But this type of ceremony is not new. Ribbon cuttings, for example, have always been recognized as a good tool for promoting goodwill within communities and for developing a neighborly exchange. The department has held ribbon cuttings periodically, possibly six times a year, throughout its history but never on as large a scale as now.

The road and bridge improvement program or Proposition A approved by Missouri voters in the spring of 1987 was the catalyst for the increase in ribboncutting ceremonies.

When voters approved the gas tax increase, the department made a promise to the voters of this state. In a nutshell, the department promised to complete many improvement projects. The projects that would be funded through the program were identified for the voters and laid out in a 15-year needs study.

For the first time, the department clearly said what would be done and what the timeframe would be. "From that point on, the highest emphasis of the department has been to deliver on that promise," says Chief Engineer Wayne Muri. "We want people to know that we're 'keeping the faith,' and we want to take that message to them any way we can."

And ribbon cuttings and groundbreakings are the quickest ways to get this message to the people. The usual custom at a groundbreaking is to hand leading citizens shovels and let them break the ground. However, the

districts have proven themselves quite adroit at inventing variations.

For example, one district has used a dazzling chrome shovel; another district has used as many as eight people each with a shovel in hand to take the first bite of earth simultaneously. Yet another district frequently has a team-dig. The diggers grab onto five handles attached to a single-headed shovel. And one district had the governor break the first ground with a bulldozer.

"Whatever the form or style, these activities are a valuable tool to keep our taxpayers informed of the progress being made on the highway system," Muri says. "It may take some time and planning, but it's time well spent."

Generally any bridge or major construction project is fair game for a groundbreaking or ribbon cutting to show Missouri's voters that the department is delivering on its promise. Although resurfacing projects usually aren't candidates for a ceremony, they might be under certain circumstances. In fact, almost anything can be celebrated. For example, the Transportation Division's waterways section once had a ground breaking for a grain-storage bin at a port authority marine terminal.

"If you are proud of the project and feel good about it, you should have a ceremony," Muri says. "Ceremonies are good public relations efforts because they provide recognition for the department and the project."

# ceremonial celebrations

Missouri's governor,
John Ashcroft,
fourth from left,
and other
dignitaries dig
ceremonial
scoopfuls of dirt
at a
groundbreaking
for Route 61 in
Jackson County.



### tbree new divisions

n 1988, the department decided to dub division status on three longtime sections. On March 1, 1988, the data processing section became the Information Systems Division. This rebirth came about because of the department's everincreasing reliance on information and the information-keepers.

Walk anywhere within a district or the headquarters office and you'll hear about CADD, Microsoft Word or PROFS. These are all automation tools that department employees depend on.

The Information Systems Division functions like a custodian of the department's data. "We're like a public utility," says Information Systems Division Director Roy Lilley. "We furnish the ability, tools and equipment it takes to run programs and do automated things. It's like getting electricity to the sockets so the home-owners can use any electrical appliance they choose."

The department's Transportation Division also lofted to a new organizational status within MHTD in 1988. This division plans Missouri's railway, waterway, transit and aviation activities through federal and state funding.

The Missouri Highway and
Transportation Commission changed
Transportation from a section to a
division to place equal emphasis on all
Missouri's modes of travel. ""Much of
the future of transportation as we see it,"
says Chief Engineer Wayne Muri,
"depends on how successfully we can
interrelate the different transportation
modes. The future is blending all of this
together."

In 1988 the department's internal review, audit and systems section (IRAS) celebrated its 25th birthday and received division status as its present. "Division status wasn't really a gift," says Muri, "because IRAS had worked hard for this."

IRAS is the watchdog of the department. This division performs external audits on utilities, contractors, railroads, consultants, universities or any other company that might invoice the department. IRAS makes sure MHTD is billed correctly.

Internally, the IRAS audits each division's and district's operations. It also develops and revises the department's accounting systems. So Happy Birthday, IRAS, and happy division status to all!

ccidents
But throu
departme
first-aid of
personnel will be prepared.

ccidents do happen. But through the department's in-house, first-aid course, its field

With the new year, the department ushered in a first-time training program to make MHTD workplaces safer by teaching employees how to respond to emergencies.

"For the past several years, there's been sporadic interest in CPR (cardiopulmonary resuscitation) training," says Mel Gardner, Personnel Division personnel liaison officer. "Each year we've attempted to give some people CPR training. Now we have a statewide training program that includes first aid."

The department's first-aid course is arranged through the American Red Cross. In the course, students spend half a day learning CPR and the other half learning first aid.

About 70 MHTD employees statewide are certified as standard first-aid instructors. These instructors conduct all first-aid training for the department.

The department's goal is to get at least one person from each outlying MHTD building including all maintenance buildings, resident engineer project offices and the district offices certified in standard first aid.

Besides those certified, all field personnel take a two-hour course in

first aid training ensures a safer workplace basic emergency first aid. The two-hour course does not lead to certification; it's to prepare employees to come to the aid of a co-worker.

MHTD purchased "Annies" or CPR mannequins for the program and placed new safety charts and fully stocked, first-aid cabinets in each building.

The department's in-house standard first-aid course combines training in basic first aid and cardiopulmonary resuscitation (CPR).



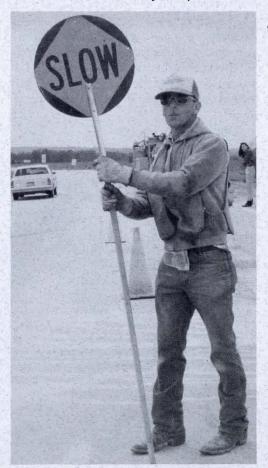
ix MHTD employees died in highway work zone accidents in 1988 and 1989, and many more were injured. Tragedies like these underscore the need for caution in the work zone. But this message must be echoed daily to remind motorists.

Encouraging motorists to go slow through work zones was one goal of the department's Give Yourself A Brake campaign, launched in late June 1988. But making the public aware of the dangers of working within inches of speeding traffic was no easy feat. The department, along with the Missouri Division of Highway Safety, the Missouri Safety Council, the Missouri State Highway Patrol, the Associated General Contractors of Missouri Inc. and the American Automobile Association, spread its safety message through news releases, bumper stickers and signs marking construction and maintenance projects.

Through the Give Yourself A Brake campaign, a more uniform speed limit in work zones was adopted and more stringently enforced. At some large construction projects, motorists saw their speeds flashed on radar signs, which reminded them to slow down.

For the 1989 campaign, the Give

Yourself A Brake campaign slogan was changed to "Give 'Em A Brake," which is a national work zone safety theme. The program also was expanded to include cities, counties and utility companies.



### give 'em a brake

Go slow. That's the message Tom Bryson, a department maintenance worker, hopes motorists obey as he stands inches from the centerline on Interstate 44 near Halltown. Unfortunately, Bryson and flaggers like him can tell horror stories of careless drivers who ignore the warnings.

### innovations '88

ike antique cars shined for a Christmas parade, two rows of department equipment gleamed in the weak sun of an October day. The air was chilly; the grass had lost the newness of spring, but a bright yellow-orange highway hue lighted the festive setting.

Amid comments such as "it's like a reunion," and "Bill, here's another thing you can build," more than 350 spectators enjoyed Innovations '88, an equipment fair sponsored by MHTD's Maintenance and Traffic and Equipment and Procurement divisions.

Innovations '88, held on the Missouri State Fairgrounds in Sedalia, let MHTD maintenance and traffic personnel, other equipment employees and clever innovators from Macon to Sikeston gather and reveal their tricks of the trade. Like hints from Heloise, these new techniques, tools, ideas and inventions help make many jobs safer, easier or more efficient.

Whether simple or complex creations, the day's entries were judged, and best of show winners were selected. First place went to a shouldering machine from District 10 (Sikeston). A belted ice-control material spreader from



District 9 (Willow Springs) won second place, and a near puncture-proof tractor tire from District 3 (Hannibal) took third-place honors.

As Maintenance and Traffic Division Liaison Engineer George Bockwinkel concluded after touring the creations, "There are so many good ideas here. You see several variations to handle a problem — different ways to invent the wheel."

Above right, **Maintenance** employee Henry Feldkamp from the Hannibal district toured the department's equipment fair, called Innovations '88. This truck, displayed at the fair, is a prototype of the department's new standard truck that will be used statewide.



onster-sized beehives cropped up across Missouri this year. And though they looked like the nests of mutant bumble bees that had migrated to Missouri for the winter, don't worry, the state wasn't being invaded. These brown beehive domes were just a new department weapon against wicked winter weather.

The huge new domes, made of concrete and wood and covered with roofing shingles, aren't filled with honey; they're filled with road salt. The domes didn't replace the department's district salt buildings; they were built to hold emergency provisions. And like squirrels who store nuts for the winter, the department stockpiles salt.

The domes are a reserve so the department doesn't get caught in a storm without salt for the roads. Besides being a nest egg, the domes should protect salt better than open-fronted salt buildings because there is less exposure to the elements.

Five areas in Missouri have the domes. Kansas City has the largest beehive. St. Louis, St. Joseph, Columbia and Springfield complete the list. Three more domes will be built next year.

The shape of these funny-looking

buildings puzzled some passing motorists. And if the onlookers were up close, the dome's size would probably astound them. Kansas City's dome is 116 feet in diameter and will hold more than 6,500 tons of salt. The St. Louis dome weighs in slightly less with a diameter of 100 feet and holds about 4,000 tons. The other domes, smaller yet, hold about 2,000 tons of salt. Conveyers fill the huge hives.

Although the department's new domes may look funny and bring a puzzled frown to the faces of passing motorists, when winter hits, they'll be thankful the department has salted away some salt.

saving salt

orklifts have replaced the saddlebags, and sweating horses with dusty riders no longer bolt at breakneck speeds over untamed terrain. Today the pony express is just a memory, but the department launched its legacy.

The time was April 13, 1988, not the pony express era of the 1860s. A shiny, yellow-orange truck labeled MHTD set out on the maiden voyage of the department's freight/mail service. Its cargo was freight and signs, mail and memos, and its driver wasn't a cowboy.

But its motto was the same — the mail must go through.

Wayne Duncan, Vickie Moran and Russell Yarnell are MHTD's freight/mail handlers who make sure the mail goes through. On a typical week, two drivers are up at dawn, jumping into the saddle to be on the route by 6 a.m. The truck, which has been loaded the night before, is filled with plastic-wrapped skids of freight and forest green mailbags marked with a district's number.

Truck No. 1 serves the west side of Missouri, and Truck No. 2 rides the east route. Both trucks rest on Friday for

moving mail

### mail continued

maintenance and a wash. Each truck will travel about 50,000 miles in a year.

Duncan, Moran and Yarnell do more though than just drive the trucks. "We load and unload the freight at the districts," Yarnell says, "and take care of all the paperwork that goes with it."

The drivers guarantee the cargo is accounted for and arrives on time. They see that the trucks are serviced. "I don't know what that 'clunk' was but have it checked out," says Moran mimicking what she does to keep her truck in good condition.

And what do these MHTD employees think about being modern-day mail riders? "I love it," says Moran, who made one of the first freight/mail trips and admits she didn't know where the districts were. "You meet lots of people at the districts.

"If you're running a little behind you get kidded about stopping for coffee,"

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she continues. "If you're late, they (the district people) worry about you."

The freight/mail routes are producing benefits. "Our goal is to provide as good and efficient service as we can," says Don Dietle, equipment and procurement director and creator of the system that the districts have fondly dubbed the "Dietle Express."

Although the department still will have postage costs for mail that must travel outside MHTD, the "Dietle Express" is estimated to save \$100,000 annually in freight and mail costs. For example, every time the department's employee publication is sent through the freight/mail service, it saves the department \$90.

"There are also many savings we can't see," says Charles Dick, MHTD airplane pilot who drafted the details of the freight/mail proposal. Two major intangible savings seem to be time and efficiency. Before the service, Dick says, the districts had to place one large freight order each month to get good shipping rates. "Now they can order once a week and know that the truck will be there," he says.

Knowing that the truck comes once a week also has reduced the amount of stock at the districts. The districts can be served from the headquarters' garage warehouse in Jefferson City.

The department's mail clerks also no longer have to rely on the hit-or-miss operation of hand-delivery to the districts by someone that's just happening to go there.

In the first month of the service, the trucks carried 233,413 pounds of cargo. By June 1988, this figure had risen to 417,441 pounds.

The pony express legacy is on the move, and Yarnell has one plea. "We want your business," he says. "But we're going to need bigger trucks."

Like a rider from the Pony Express, Freight and Mail Handler Vickie Moran knows the mail must go through. he boss assigns you a task and says you have two years to finish it. A two-year deadline, oh boy! Gleefully, you decide you'll begin next year. Right? No, not when your task is producing Missouri's official map.

Kieth Hassler, Jim Fink and their coworkers in the department's Main Office Planning Division get handed this task, but they don't procrastinate. Although a new map only comes out every two years, the process of making Missouri's map is ongoing. The map-makers spend the two years between issues making sure Missouri's guide to nevergetting-lost is correct and up-to-date.

Traditionally, a new map's release date is the first week of February. And the 1989-90 map didn't break tradition. For the past several years, the map's cover has sported a single theme celebrating the birthday of a Missouri city. This year Boonville and the University of Missouri-Columbia turned 150 years old, so the new 1989-90 map celebrated two birthdays. Pictures of historic buildings at Boonville and the university share one map panel, while a "Missouri on the Move" slogan covers the other.

Jim Fink, a Planning Division cartographer, does the cartography work for Missouri's Official Map, and you can bet this is full time. He must keep track of all roads under construction, changes in population or route markings, plus any Highway and Transportation Commission, headquarters or district change. And the list goes on. All cities, roads, hospitals, colleges, parks and rivers among others are checked to see what's new or different.

For the first time, the 1989-90 map includes major rail lines and the Missouri State Highway Patrol's emergency help number. The map's index to cities and villages also has been changed. It's now called the index to cities and counties because now it includes county names and populations. All route revisions on the state highway system are on the new

map, including sections of highways that have been upgraded from two lanes to four.

Fink makes the changes on an oversized map that is reduced to the common glove-compartment size for printing. If there's a mistake on this immense map, it's reproduced 2.5 million times! That's how many copies the department makes to distribute free to the public. It costs about 14 cents to print one map.

Once the new map is issued, Fink's critics scour the map for mistakes, he jokes. "It comes out Feb. 1 usually looking pretty good."



making the map

Do you think Jim Fink knows how to find any spot in Missouri? You bet he does. As a cartographer for the department, Fink's full-time job is making Missouri's official map.

### martianlike machine photographs missouri's pavement

Like bats who navigate through caves, the PASCO unit can see in the dark! The PASCO, a device that analyzes pavements, uses bright halogen lights to illuminate the payment for photographing.



hen a bright, white light flooded the pavement like a scene from a

science fiction movie, motorists traveling Route 65 two miles south of Chillicothe, Mo., on the night of March 8, 1989, probably thought they were seeing a "UDO." But don't panic, they weren't. This "UDO" or unidentified driving object wasn't manned by Martians from outer space. It was driven by humans for the Strategic Highway Research Program (SHRP).

On this March night, the humans weren't causing havoc; they were running a PASCO unit over a pavement test section on Route 65. This test pavement is one of 19 sections of Missouri's highways that are part of a SHRP research project called the long term pavement performance (LTPP).

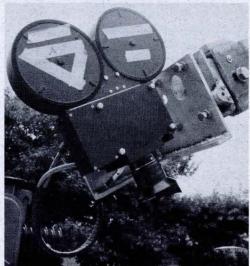
But how did SHRP pick a piece of Missouri pavement to study? The department volunteered to be a guinea pig in the SHRP project. "SHRP sent each state certain criteria the test section had to meet before it could be a likely candidate for the study," says Bill Trimm, Materials and Research Division engineer. These criteria included environment, pavement type and thickness, base and sub-base, traffic, soil conditions, climate, moisture and temperature.

Statewide the department identified about 70 pavement sections, both asphalt and concrete, to be considered for the study. Of the 70, 19 were winners.

Motorists traveling roads such as Route C in Cole County, Route 40 in St. Louis County, Route 412 in Dunklin County or Route 60 in Carter County could drive on one of these 19 test sections. But they'd have to be observant to know it. The 500-feet-long sections are marked on the roadside by a blue sign with a SHRP logo. White lines on the road show where the section begins and ends.

The MHTD Maintenance and Traffic Division made signs to mark the plot; the Planning Division is collecting the traffic data SHRP needs. Personnel from the divisions of Construction, Design, Materials and Research, Bridge and Maintenance and Traffic are involved. "Although there is a lot of time and expense involved for each individual state," Trimm says, "the states get the benefit of the research."





The states could benefit from the study's initial findings in the early 1990s. If the money's there, the long term pavement performance project should continue for 20 years. Currently, the pavement project is part of a five-year, \$150 million SHRP reseach program funded through the Federal-Aid Highway Act of 1987. MHTD is paid for its time and expense from a pool of federal money designated for use by the states as Highway Planning and Research Funds.

SHRP contractors do the actual testing at the plots; the visiting PASCO unit was an example of this work. The PASCO unit is a device used to analyze pavement conditions. But the PASCO only comes out at night! The unit uses bright halogen lights to illuminate the pavement while taking photographs of it. By filming at night under controlled lighting, the PASCO is able to detect any cracks, marks or ruts in the pavement surface.

The Missouri Route 65 photo session was noteworthy. Nationwide, it was the first official PASCO analysis of a SHRP long term pavement performance test section. During the trip to Missouri, the humans in the PASCO unit analyzed other test sections, too.

SHRP contractors perform many tests on the pavement. For example, after the PASCO analysis, a team brought a piece of equipment called a falling weight deflectometer (FWD) to the test sections. This deflectometer measures how much the pavement moves or deflects under a load such as a transport truck.

Testing what's below the pavement also is part of the data needed in the research project. SHRP contractors also cored out a section of the pavement and took samples from the pavement and road base to test for moisture and other factors that affect the condition and life of the pavement. MHTD employees handled traffic control when the contractors were working at the test sites.

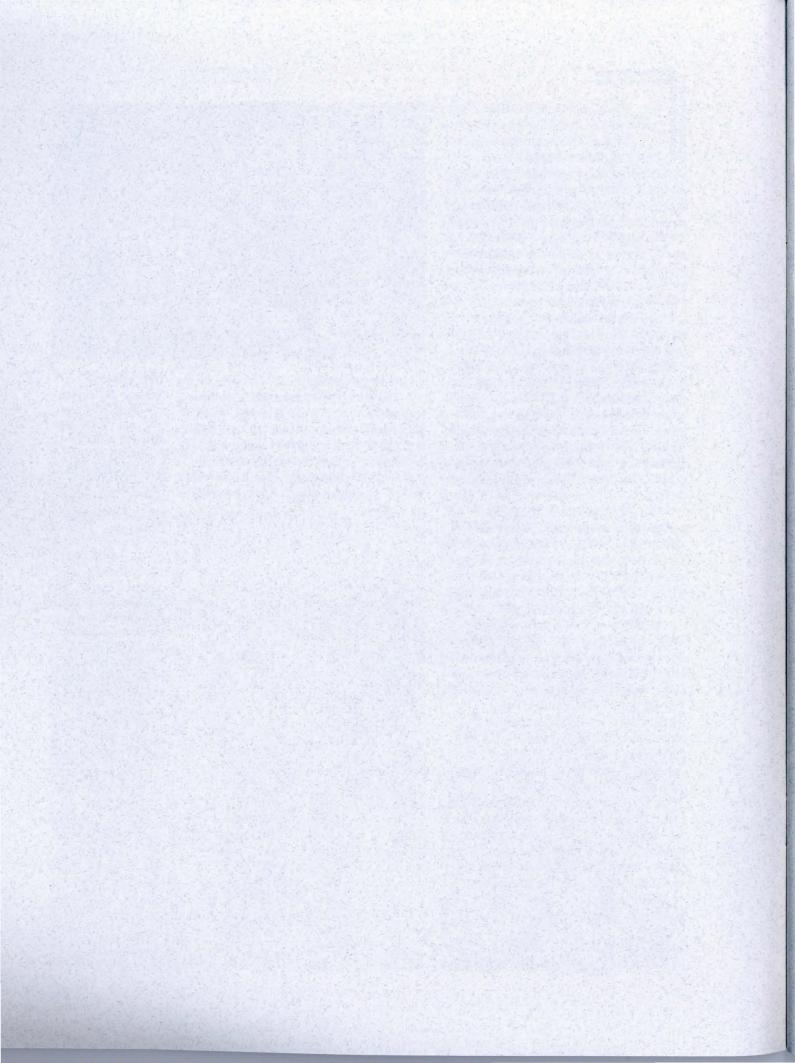
SHRP also requires continuous traffic counts and vehicle classifications



on the test sections.

The information collected from the test sections will be put in a data base, so researchers and others can use the findings for future highway design. And by keeping an eye on how the nation's highways are weathering the wear, SHRP will pave the way to better pavements.

This nuclear device, sitting in a 4- by 6-feet test pit, measures the density and moisture of the underlying soil. The test pit is one way researchers with the Strategic Highway Research Program (SHRP) are studying pavements. Missouri has 19 test pavement sections enrolled in SHRP's longterm pavement performance research project.



# districts

is co

istrict 1 is made of 12 counties in northwest Missouri; the district office is in St. Joseph.

There are approximately 455 employees working in seven departments.

The Maintenance and Traffic Department is divided into 10 areas, has 32 maintenance buildings and maintains 3.467 miles of roadway.

At the department's equipment fair, called Innovations '88, District 1 won 13 awards out of 27 entries.

As of June 30, 1989, the district had 163 groups enrolled in Missouri's Adopt-A-Highway program.

District 1 has three resident engineers' offices; they are in Maryville, St. Joseph and Cameron. Major construction projects include the following:

\*Buchanan Interstate 29 near St. Joseph — bridge rehabilitation and resurfacing:

\*Buchanan 169 at the Platte River — bridge replacement;

\*Buchanan 169 in St. Joseph — resurfacing:

\*Clinton-Caldwell 116 east of Lathrop — new concrete pavement;

\*Clinton 69 south of Cameron — resurfacing;

\*Gentry 136 at the west fork of the Grand River — bridge replacement;

\*Harrison I-35 north of the Eagelville weigh station —rehabilitation; and

\*Nodaway 71 south of Maryville — resurfacing.

The district's Design Department has applied value engineering to two major projects under design. These studies have resulted in a projected savings of \$1,400,000 in construction costs for one project and a \$9,400,000 projected savings on the second.

The Equipment and Procurement Department maintains the district's equipment including 45 passenger vehicles, 40 pickups, 200 trucks (mainly dump trucks) and 280 pieces of off-road equipment. This fleet equals an investment of about \$10.9 million; the district spends about \$0.7 million yearly for parts. Operating costs for the 12-

county area are about \$2 million yearly.

The Materials and Research
Department inspects the materials used
for maintaining and constructing
roadways. During fiscal year 1989,
Materials and Research personnel have
inspected 17,574 linear feet of
corrugated metal pipe, I,273,640 pounds
of reinforcing steel, 30,830 pounds of
seed, 6,398 linear feet of prestressed
concrete I-Beam, 11,900 linear feet of
precast concrete median barriers and
991,626 tons of aggregate.

District 1 also conducts cardiopulmonary resuscitation/first-aid classes and drivers' training for employees. Pre-retirement meetings and service award dinners are held each year for employees. The district held a meeting for retirees this past fall to inform them of department changes and happenings.

District 1 has had eleven employees selected to receive the Employee of the Month award.

The district also has many activities such as the annual Employees' Association softball tournaments to raise money for a needy family at Christmas, pitch tournaments, and steak dinners for employees who are retiring.

#### **FAMILY DAY**

In 1987 District 1 held the department's first FAMILY DAY. A 20-member committee organized the event. In all 1,400 employees, retirees and their family members attended. The day's entertainment included an employee barbershop quartet, an employee's player piano and a retiree band. Giveaway items were passed out, and drawings were held for door prizes donated by employees.

Each department and maintenance area had a display. The booths also displayed items pertaining to that area, and district office tours were conducted.

FAMILY DAY '87 was considered a great success thanks to employee participation. District 1 helped other districts plan their FAMILY DAYS.

district 1 st. josepb istrict 2 oversees highway activities in north central Missouri. The 14 counties of District 2 are Adair, Carroll, Chariton, Grundy, Howard, Linn, Livingston, Macon, Mercer, Putnam, Randolph, Saline, Schuyler and Sullivan; the 14 counties contain more than 8,000 square miles. Within this 8,000 square miles are 3,746 miles of highway — 24 miles of interstate, 733 miles of primary and 2,989 miles of supplementary roads.

Maintenance of this large road system is handled by 11 maintenance areas with 32 buildings. In addition, there are five special crews in two locations to handle tasks such as signing, striping and bridge and pavement repair. District 2 has 336 maintenance employees.

The Design Department has 28 employees, which work at the district office in Macon. The district office also has the Right of Way Department with eight employees, the Fiscal Services Department with 11 employees and the Equipment and Procurement Department with 28 employees, which includes 15 field mechanics assigned to the district's various maintenance buildings.

Of the 10 Materials and Research Department employees in District 2, two are at Marshall. Their main duty is to inspect precast bridge beams at the Quinn precast plant. Most precast bridge beams for Missouri highway projects originate here, as well as beams for out-of-state projects. The two District 2 inspectors make sure the beams are built according to department plans and specifications.

Construction work is managed by three resident engineers working from four offices. Major construction projects include the following:

\*dual-laning of Route 36 from Macon to Bevier;

\*adding a third lane to U.S. 63 in Macon;

\*construction of the Route 24 viaduct in Moberly; and

\*many smaller bridge and resurfacing jobs.

There are 50 construction employees. In all, District 2 has 472 employees.

District 2 has an active and proud history of dedicated and involved employees. One of the earliest MHTD Employees of the Month was Maintenance Superintendent Norman Mears, who was also selected as the state Employee of the Month. Mears has been instrumental in the district's safety record, which has been the best in the state for many years.

The district encourages civic and service groups to participate in the Adopt-A-Highway Program. As of June 30, 1989, there were 146 groups adopting 303 miles of highway. Two adoptions are for sections of 10 miles or longer; the average adopted section is more than two miles. District employees have spent many hours explaining the program at meetings and making adoption presentations.

# district 2 macon





Sharing a common border, districts 1 and 2 encompass 26 counties in northwest and north central Missouri. At left, District 1 Lighting and Signal Electrician Gary Lewis (left) and Maintenance Worker John Bravo replace light bulbs on Interstate 129 in St. Joseph. Below left, Chief **Engineer Wayne** Muri (left) and District 2 Maintenance Worker Roy Forbes shake hands at a district meeting.

### district 3 bannibal

istrict 3, headquartered at Hannibal, encompasses the area of Audrain, Clark,

Knox, Lewis, Lincoln, Marion, Monroe, Montgomery, Pike, Ralls, Scotland, Shelby and Warren counties. Within its jurisdiction, District 3 has 3,609 miles of two-lane highways. In all, 403 people work at the Hannibal district. The district has 10 subareas, 38 maintenance buildings and two resident engineer offices at Hannibal and Bowling Green.

The district's construction projects include the following.

\*Route 61 in Pike County — Grading, constructing culverts and concrete pavement I.4 miles south of Route 161 to 0.6 mile south of Cyrene; 5.96 miles; completed Aug. 3, 1988.

\*Route 79 in Pike County — Bridge rehabilitation and asphalt resurfacing 0.5 mile south of Route 54 in Louisiana to 0.5 mile south of Route W in Clarksville; 10.83 miles; completed Oct. 3, 1988.

\*Route 16 in Lewis County — Culvert work, bridge rehabilitation, asphalt resurfacing from Route 6 to 1.2 miles west of Route 61; 14.469 miles; completed Oct. 3, 1988.

\*Route 61 in Ralls and Pike counties,
— Bridge rehabilitation and asphalt
resurfacing for 0.5 mile south of Route
19 to 0.9 mile north of Route U; 13.154
miles; completed Oct. 11, 1988.

\*Route 136 in Clark County — Grading, constructing culverts, two new bridges, concrete pavement and asphalt resurfacing 1.4 miles west of Route 136 Spur to Route 136 Spur; I.244 miles; completed Sept. 21, 1988.

\*Route 61 in Ralls County — Resurfacing and widening. Business Route 61 to 0.5 miles north of Salt River; 3.272 miles; completed June 1989.

\*Route 61 in Marion County — Resurfaced south-bound lane of Route 61 from Route 6 south for 3.993 miles; completed May 22, 1989.

\*Interstate 70 in Montgomery County
— Rest area beautification at Danville,
east and west-bound lanes; 99 percent
complete.

\*Route 6 in Knox-Adair County —

Bridge replacement over the railroad with new roadway to make tie-ins with existing pavement; 0.73 mile; completed June 2, 1989.

\*Route 15 in Monroe County — Bridge replacement over Otter Creek, three miles north of Paris, with new roadway and pavement to make tie-ins with existing pavement; 0.53 mile; completed May 1, 1989.

\*Route 15 in Monroe County — Bridge replacement over Elk Fork Salt River, one mile south of Paris, with new roadway and pavement to make tie-ins with existing pavement; 0.603 miles; 6 percent complete.

#### **Materials Department**

Throughout the past fiscal year, the Materials and Research Department has inspected 19 quarries, nine sand producers, two gravel producers and one mineral-filler producer. These locations produced I,302,919 tons of aggregate for state use.

This department also inspected three cement plants and two oil terminals; this resulted in inspection reports for 42,301 tons of cement and 7,624,875 gallons of asphalt.

Materials and Research personnel calibrated eight concrete ready-mix plants for construction and maintenance work and designed 27 asphalt and 18 concrete mixes for construction work.

This department provided inspection at four concrete precast plants where temporary traffic barriers, drop inlets, pipes, tee girders and concrete girders are cast.

In all, 669 general material samples were submitted to the department's Central Laboratory in Jefferson City.

Soil survey reports were completed for eight construction projects.

District 3's territory has some unique features. For example, in District 3 the scenic Great River Road follows Route 79 from Hannibal to Old Monroe, and the Lewis and Clark Trail follows Route 94 in Warren and Montgomery counties. The Mark Twain Lake and Clarence Cannon Dam are major recreational attractions in

District 3.

District 3 helped the Mexico Chamber of Commerce host the Highway and Transportation Commission meeting Jan. 13, 1989, in Mexico, Mo.

The district office and garage buildings are being modified to install the district's Computer Aided Design and Drafting (CADD) System and new computers.

District Engineer Dick Jones accepted an award on behalf of District 3 for the design of the new Quincy Bay View Bridge.

As of June 30, 1989, District 3 had 120 groups enrolled in Missouri's Adopt-A-Highway program.

#### Chat With the Chief

On June 28, 1989, District 3 was the site of the department's first Chat With the Chief event. Thirty-two District 3 employees representing each maintenance area, resident engineer office and department within the district met with Chief Engineer Wayne Muri to discuss what's happening at the department and how this affects the employees' daily work.

#### FAMILY DAY

The District 3 FAMILY DAY was June 3, 1988, and about 1,000 guests attended. Volunteer employees conducted buildings and grounds tours. The Missouri State Highway Patrol and each district department had an exhibit.

Door prizes given throughout the day were handmade items donated by employees, their spouses and relatives. An employee and family member band, including District Engineer Dick Jones on bass guitar and District Office Manager Floyd Gilliland on rhythm guitar/vocals, entertained the guests.

District 3 employees planted a tree on the grounds and dedicated it to the memory of employees who died in service to District 3, the department and the state of Missouri.



District 3
Maintenance
Crew Leader
Mike
Schwallenstecker
has worked for
the department
for more than
12 years.

district 3 continued

### district 4 kansas city

istrict 4 oversees the highway and transportation system for west central

Missouri. It is headquartered in Kansas
City and has been at the same site.

City and has been at the same site, 5117 East 31st Street, since 1932. The original office building and the district garage were enlarged in 1957, and another wing was added to the office building in 1968.

The district is made of eight counties: Cass, Clay, Henry, Jackson, Johnson, Lafayette, Platte and Ray. The district has 43 administrative personnel, 122 construction personnel, 76 design employees, 34 equipment and procurement employees, 1 legal employee, 389 maintenance and traffic personnel, 27 materials and research employees, one employee from personnel and 18 right of way employees. In all there are 711 District 4 employees.

The Maintenance and Traffic Department maintains 2,716 miles — 334 miles of interstate, 669 miles of primary and 1,713 miles of supplementary roads. There are 39 maintenance buildings under the supervision of eight area supervisors and eight special maintenance supervisors.

The Construction Department has seven resident engineer offices. The

District 4
Aggregate
Inspector
Joyce Schrankler
performs a
hardness test on
a bolt head at the
department's
Materials
Laboratory in
Jefferson City.



major project under way is Bruce R. Watkins Drive. The project's estimated cost is \$200 million; it is scheduled to be completed in 2002. The project's total length is 10 miles.

The Design Department has eight squads preparing plans for roadways. This department also prepares all agreements and administers various programs with county and city governments.

District 4's Right of Way Department contains an office staff with sections for negotiation, relocation assistance and property management, description writing and appraisals. Proposition A has kept the Right of Way Department busy. The year's largest projects were the portion of Cass 7 between Harrisonville and Garden City, the Oak Grove Interchange on Interstate 70 and Route 291 north of 23rd Street in Independence.

The Materials and Research Department inspects materials used in the district's highway construction and maintenance and performs inspections for other districts and states.

The district has 675 pieces of rental equipment that are maintained by 17 field and five shop mechanics.

The Legal, Personnel and Fiscal Services departments offer support services for the district. A claims investigator/safety officer has been added to the fiscal services staff. The investigator/safety officer handles risk management tasks.

### Unique Highlights

Under the leadership of District Engineer Bob Chappell, District 4 had a great year. The district held service awards ceremonies for 108 employees with 2,135 years of service and had 28 people retire a total of 896 years of service.

District materials and research personnel remodeled an old storage building, enlarged their laboratory to 586 square feet and constructed 2,424 square feet of office space. They completed the project in December 1988.

Norman Beeman, a District 4 permit inspector, was chosen the January 1989 Employee of the Month.

Effective March 1, 1989, the district adopted revised work hours in cooperation with the Mid-America Regional Council's efforts to reduce air pollution from automobiles during rush hour. The district has been successful using the new 7:30 a.m. to 4 p.m. hours. It has found that the hours are accepted by the public and beneficial to employees.

The district maintenance and traffic permit inspectors have administered a successful Adopt-A-Highway program.

As of June 30, 1989, the district has issued 315 permits for adoption; it presented the 1000th statewide adoption resolution in June 1989.

#### **FAMILY DAY**

FAMILY DAY '88 was held at the district office. More than 1,100 people attended. Entertainment included a Dixieland band. Door prizes were given every hour, and raffle for a television set was held. Through a wet sponge throw, a dunk tank and the raffle, \$571 was raised for the District 4 Christmas Fund, which is used each year to help a needy family within the district.

district 4 continued

istrict 5 has seven departments including fiscal services, equipment and procurement, maintenance and traffic, construction, design, right of way and materials and research. The district has approximately 504 employees. There are 11 maintenance areas, 43 sub-area buildings, five special crews and five construction project offices.

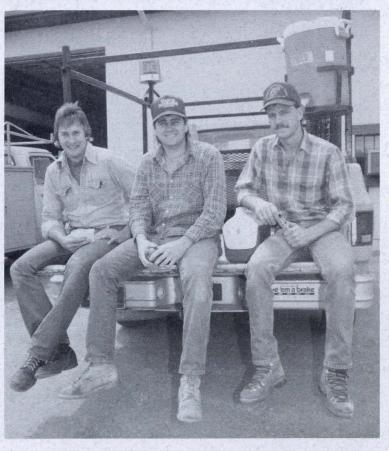
The district covers a land area of 7,787 square miles and encompasses the 13 counties of Benton, Boone, Callaway, Cole, Camden, Cooper, Gasconade, Maries, Miller, Moniteau, Morgan, Osage and Pettis, including the Lake of the Ozarks area and the cities of Sedalia, Columbia and Jefferson City. The district oversees 78 interstate miles, 819 miles of primary system highways and 2,558 miles of supplementary system roads.

The major construction projects in District 5 are as follows:

\*the design of a companion Route 54 Missouri River Bridge, reconstruction of Route 54, the tri-level interchange and other interchanges in Jefferson City;

\*Route 50 relocation paving — west of St. Martins to 0.3 miles west of Jefferson City urban limits, total length of the improvement 4.654 miles; District 5 maintenance employees from left Henry Hentges, Jim Westhoff and Darrell Wilbers enjoy their lunches on the tailgate of an MHTD pickup.

district 5 jefferson city



# district 5 continued

\*Route 19, Gasconade County - two bridge replacements;

\*Route 740, Boone County — widening from two to four lanes;

\*Route 163, Boone County — widening from two to four lanes;

\*Interstate 70, Cooper County — resurfacing from the Missouri River west about 7.5 miles;

\*Route 50, Moniteau County — widening, resurfacing and installing traffic signals in the city of California.

istrict 6 contains the

As of June 30, 1989, District 5's Adopt-A-Highway program had 201 adoptions with more than 330 miles

adopted in a 13-county area.

#### **FAMILY DAY**

FAMILY DAY '88 for District 5 was held on a sizzling July day. More than 1,400 participants enjoyed turtle races, a dunking booth, Shriner clowns, Smokey the Bear, Buckle Bear and a mini railroad. The Credit Union and each district department, maintenance area and special crew manned exibits representing their respective fields. A clogging group and several District 5 employees in a FAMILY DAY band entertained the guests.

city of St. Louis and the counties of St. Louis, St. Charles, Louis, St. Charles, Franklin and Jefferson. There are 1,475 miles of highway in the district, including 222 miles of interstate.

The district has 825 full-time

The district has 825 full-time employees that area assigned to 29 maintenance buildings, I0 resident engineer offices and the district office.

District 6 oversees two major

District 6 Maintenance Worker Dennis Riggins from the Normandy Landscape Crew

spruces up a rest area in St. Louis.

st. louis

structures being constructed across the Missouri River. A Route 40 bridge will be opened to traffic in fall 1989. Substructure work on the Route 115 bridge has begun. A major interchange is under construction at Route 40 and Interstate 270.

As of June 30, 1989, the district had 165 Adopt-A-Highway groups enlisted in the program.

#### FAMILY DAY

FAMILY DAY '88 was held Aug. 18, 1988, in District 6. Nearly 1,250 visitors turn out for the event. The district offered door prizes from T-shirts to ceiling fans.

The district had musical entertainment in the dining area, a roving clown with balloons and a dunking booth. Dunking booth stars included District Engineer J.T. Yarnell and Assistant District Engineer-Operations Charlie Bottermuller, who has since retired.

Each department had displays showing employees and the work they do. For example, the district sign shop displayed signs throughout the department's history. The Design Department made a display of construction projects in the metropolitan St. Louis.

istrict 7, headquartered in Joplin, has 417 active full-time employees: 21 administrative employees, 38 construction, 27 equipment and procurement, 273 maintenance and traffic, nine materials and research, seven right of way and 41 design. Approximately 32 temporary employees and 45 summer students were employed during 1988.

The district has 37 maintenance buildings; the Joplin maintenance building and sign and signal shop are within the district office complex. There are three resident engineer offices located at Neosho, Carthage and Nevada.

The first stage of the district's equipment and procurement complex that includes a service area, cleaning room, paint room and automatic carwash system was put in operation in March 1988.

The district maintains 3,331 miles of highway; this includes 60 miles of interstate, 729 miles of primary and 2,542 miles of supplementary roads.

The district striping crew completed 4,751 miles of striping during this time period, and the sign crew maintained 41,702 signs.

Permit inspectors report that 1,196 permits were issued. Of the 1,196, 87 were for commercial entrances, 269 for private entrances and 840 for excavation permits.

District 7, the southwest district, encompasses the 11 counties of Barry, Barton, Bates, Cedar, Dade, Jasper, Lawrence, McDonald, Newton, St. Clair and Vernon.

#### Construction

Major construction projects in District 7 during the period of July 1, 1988, to June 30, 1989, included the following:

\*F-71-2(40) in Newton and McDonald counties, F-71-1(26) in Newton County — resurfacing and shouldering at Neosho and south to Anderson from the end of four-lane south



of Neosho:

\*F-BRF-54-1(10) in Vernon County
— 24 feet of Portland Concrete cement
pavement and replacing two bridges
from west of Deerfield to the Kansas
state line;

\*7-P-54-353 in Lawrence County — widening, continuous left-turn lane and resurfacing in El Dorado Springs;

\*7-P-54-309 in St. Clair County — bridge replacement at Sac River;

\*F-BRF-71-2(39) in Jasper and Newton counties — resurfacing, shouldering and bridge replacement from Interstate 44 to south of Diamond;

\*7-P-160-334 in Barton County — widening, continuous left-turn lane and resurfacing in Lamar;

\*F-FG-76-1(5) in Barry County — widening, continuous left-turn lane and resurfacing in Cassville;

\*F-160-1(15) in Barton County — widening and resurfacing from Lamar to Route F:

\*F-BHF-39-1(11) in Lawrence County — widening and resurfacing of District 7 seasonal maintenance employees from left Brad Richter and Charles Campbell say a little dab will do you as they mix concrete to repair a bridge deck on Interstate 44 near Halltown.

district 7 joplin

# district 7 continued

Truitt Creek Bridge north of Mt. Vernon;

\*F-FG-39-1(12) in Lawrence County — widening, continuous left-turn lane and resurfacing in Mt. Vernon.

Between July 1, 1988, and June 30, 1989, two District 7 employees have received an Employee Suggestion System award. They are District Auditor Ann Biggs and Senior Highway Designer Jerry Pryor.

As of June 30, 1989, the district had 102 Adopt-A-Highway groups signed up for the program.

#### **FAMILY DAY**

The District 7 FAMILY DAY was June 10, 1988; about 1,300 people attended. Besides many displays, the big attractions were the 118 prizes given away. The prizes were made, purchased or donated.

These organizations and groups set up displays at the event: Tourism Information Center, the Missouri State Highway Patrol, 37 district maintenance buildings, Maintenance and Traffic office personnel, the Surveys and Plans Department; three construction offices, the Sign Shop and Striping group; the Signal Shop, the Administrative office, District 7 retirees, the Credit Union, the Right of Way, Materials and Research and Equipment and Procurement departments, the district garage and the Employees' Association.

Clowns, a band and others entertained the guests. The district also had a large equipment display and many displays showing employees at work.

istrict 8 is a 12-county area with 3,648 miles of state highways. The district boundaries extend north to Hickory County, which includes the Pomme De Terre Lake area. To the east are Laclede, Webster, Wright and Douglas counties; they include the cities of Lebanon, Mountain Grove and Ava. To the south, District 8 runs to the Arkansas state line. This area includes the Ozark Mountain region that is home to Branson and the lakes area.

The Ozark Mountain region is southwest Missouri's leading tourist attraction with the Branson area expecting more than 4.5 million tourists this year. District 8's main metropolitan area is Springfield with a population of approximately 150,000 people.

District 8 has 480 employees with the majority of employees working from 39 maintenance buildings and two project offices in Springfield and Buffalo.

Four new positions were created in 1988 and 1989. They are as follows:

\*district personnel officer, who handles personnel activities such as hiring, recruiting and disciplinary actions; \*district investigator/safety officer, who creates and oversees an effective safety program, investigates accidents and helps with cardiopulmonary resuscitation/first-aid training;

\*district computer specialist, who oversees the Computer Aided Design and Drafting (CADD) system and assists employees with computer systems; and

\*district equipment office clerk, who assists the district equipment supervisor and chief mechanic in garage clerical duties.

The district office appearance has changed through the work of Building Maintenance Crew Member Howard Thieman. With help from the Roadside Enhancement Crew, he has made the district office grounds quite a showplace. The inside offices have changed, too, through new wallpaper, paint, chairs and woodgrained desktops.

District Auditor Dale Forbes was named the May 1989 Employee of the Month, and Field Mechanic Wayne Woody was the July 1989 Employee of the Month.

District 8 received the Bronze Award for employee contributions to the United

district 8 springfield Way campaign.

The department chose District 8 to evaluate the CADD system, which completed two projects for letting in July 1989.

The district's construction season was busy with the completion of the first section of Route 60 (M), James River Freeway, completed November 1988. Other major construction projects are the following:

\*Route 60 — Greene County (James River Freeway):

\*Route 65 — Taney County;

\*Interstate 44 — Laclede, Webster counties;

\*Route F — Taney County; and \*Route 54 — Hickory County.

The Adopt-A-Highway program has been a great success in the Ozarks. As of June 30, 1989, 268 groups had adopted a portion of District 8 highway through the program.

#### FAMILY DAY

counties.

District 8's FAMILY DAY was April 29, 1988, with more than 1,200 employees, family members and retirees attending. Clowns, cloggers and a country music band of employees, employees' families and friends

entertained the quests. Each

district 8 continued

District 8
Intermediate
Highway Design
Technician Dave
Mann draws
plans for
highway
improvements in
the Springfield
district's area.

entertained the guests. Each department made a booth or display, and the best field and office displays won plaques. Highway equipment was on display, and the Missouri State Highway Patrol displayed patrol cars.

Many prizes including a microwave oven, a video camera recorder, a stereo and gift certificates were given at the FAMILY DAY event.

istrict 9, headquartered in Willow Springs, encompasses the 13-county region of Carter, Crawford, Dent, Howell, Iron, Oregon, Pulaski, Phelps, Ripley, Reynolds, Shannon, Texas and Washington

The district's Maintenance and Traffic Department has an authorized staff of 12 office and 286 field personnel. They maintain the largest district in the state, which includes 3,726 miles of roadway. Of this, 78.5 miles are interstate; 1,048 miles are primary routes, and 2,599 miles are supplementary routes. These routes are maintained from 36 maintenance and two special crew buildings, which are

divided into 11 sub-areas.

The Adopt-A-Highway program has become increasingly popular in the District 9 region. As of June 30, 1989, 64 groups had signed their adoption papers in District 9.

The Construction Department has 54 employees. This construction season, the department oversaw construction on Route 60, a bypass around Cabool and widening to three lanes at Fremont. Route 160 is receiving a new bridge over the Norfork Lake. Route 63 in Rolla received widening, signals and an overpass over Interstate 44.

Various interstate rehabilitations are in progress along with numerous asphalt overlays. These projects are supervised district 9 willow springs

# district 9 continued

from three resident engineer offices located at Van Buren, Rolla and Mountain Grove. A new resident engineer office in Willow Springs has been approved for construction.

After completion, the Mountain Grove resident engineer office will be phased out and moved to Willow Springs.

The Right of Way Department's seven employees have been in the real estate business during fiscal year 1989. They acquired right of way for highway construction totaling \$362,477.75. This included 44 parcels — 34 by negotiation settlement and 10 by condemnation or 77 percent by negotiation and 23 percent by condemnation.

Payments totaling \$11,385.13 were made this year under the Relocation Assistance and Payment Program to assist displaced families in relocating. During fiscal year 1989, six relocation claims were processed and paid. Also, appraisals were obtained on 43 parcels. Receipts from excess property total \$25,768. Rental of property acquired for future construction resulted in an income of \$1,600.

The District 9 Design Department has 29 authorized personnel. Currently 70 projects are being designed. Major projects include the upgrading of Route 60 from Willow Springs easternly in several locations, including a new bridge over the Current River at Van Buren. Route 63 is being upgraded near West Plains.

The Fiscal Services Department has

eight office and two maintenance personnel. They handle payment of payrolls and commercial and equipment invoices. They're also responsible for daily and monthly reports from the maintenance buildings and construction offices. Further responsibilities include life and health insurances, workers' compensation, credit union, building maintenance and district correspondence.

The District 9 Equipment Division has 30 employees: 18 field mechanics and helpers, nine shop personnel and three stockroom employees. In the 13-county district, they care for approximately 554 units, which includes 45 cars, 44 pickups and carryalls, 195 trucks, 87 tractors, 43 loaders, 39 distributors, 56 motorgraders and 45 other units. The stockroom personnel oversee parts and supplies inventory of \$485,350.

The Materials and Research Department has 11 employees. They inspect 23 quarries, 111 gravel sources and 11 ready-mix plants. In fiscal year 1989, they have inspected 833,836 tons of aggregate, which includes 577,669 tons of crushed stone, 213,766 tons of gravel, 15,843 tons of sand and 26,558 tons of porphyry.

Materials personnel inspected 1,514,318 gallons of emulsified asphalt. Many materials such as calcium chloride, sodium chloride, paint, corrugated metal pipe, reinforced concrete pipe and others were inspected, too.

District 9 has had two Employees of the Month. Bob Woodring, district highway design engineer, was the October 1983 honored employee. Steve Hutchison, field mechanic, was the May 1986 Employee of the Month.

In 1990, the district office will build an addition for offices. The district purchased a building to remodel for the garage and stockroom.

#### FAMILY DAY

District 9's FAMILY DAY was held June 24, 1988. More than 1,100 people

District 9
employees
from left,
Maintenance
Crew Leader Roy
Doyle and
District Engineer
Phil Jackson
discuss
maintenance
operations at a
district
gathering.



attended. Eleven maintenance areas had booths showing aspects of their work. Each office section had its specialty displayed. The garage had a wildlife display with stuffed animals and trophies bagged by the area hunters. The U.S. Forestry Service had a forestry display. Smokey the Bear and Woodsy Owl were present. Troop G of

the Missouri State Highway Patrol brought a display trailer.

A children's tent was set up for games and activities. Singing, clogging and fiddle playing entertained guests.

The district employees donated door prizes for adults and children including microwaves, patio furniture, video cassette recorders and cash awards.

# district 9 continued



rom 1921 through 1987, District 10 encompassed the counties of Scott, New

Madrid, Mississippi, Pemiscot, Dunklin, Ripley, Butler, Wayne, Stoddard, Bollinger, Cape Girardeau and Madison. With the realignment of the district in 1988, the counties of Perry, Ste. Genevieve and St. Francois were added, and Ripley County was transferred to District 9. However, the Naylor Maintenance Building in Ripley County was retained by District 10. The district now consists of 14 counties in southeast Missouri and covers a land area of 7,984 square miles.

#### Personnel

District 10 has approximately 525 full-time salaried employees and about 100 seasonal employees.

During fiscal year 1988, 27 employees retired; 119 permanent and seasonal employees were hired. Nine employees resigned, and nine employees were released. The district also processed about 1,500 new employment applications.

The District 10 Highway and Transportation Employees' Credit Union, managed by the district personnel services clerk, serves the financial needs of its state highway patrol and highway and transportation department members. Total membership is 920 with total assets of \$3,354,000. During the past fiscal year, 339 loans were processed totaling about \$1,168,348.

District Fiscal Services Division

employees processed about 8,100 checks to suppliers; checked and extended totals on more than 10,000 daily crew reports; added more than 500 items to the tool inventory; took inventory at 36 maintenance buildings, five resident engineer offices and the district office; and verified that 3,500 pieces of equipment were in service and tagged properly. Other items included processing commercial invoices, physical inventories and usage reports for 820,000 gallons of petroleum products. This department also processed 109 property damage claims, 79 auto liability claims and 98 new workers' compensation claims and issued about 1,150 overdimension permits from June 30, 1988, to July 1, 1989.

During the past year, the district office was outfitted with thermo-pane windows and mini blinds. Preparing for more improvements, the district purchased fencing for security, made plans for resurfacing the parking and drive areas, replaced the ceiling tile for better lighting and purchased additional lighting for the building's design area.

The building maintenance and grounds section has three full-time employees. Besides providing janitorial service at the district office, they also maintained the heating and airconditioning, painted, provided janitorial service to two other facilities in Sikeston and ran electrical wiring and telephone lines.

Partitioned work centers are planned, and the Design Department will soon have a location for the Computer

district 10 sikeston

# district 10 continued

Aided Drawing and Drafting (CADD) system slated for installation after January 1990.

The Right of Way Department has relocated about a half mile from the district office. It now has about 1,500 square feet for 11 employees.

This department has acquired 105 parcels on 15 projects with 75 parcels being negotiated and 30 being condemned. Also, the Right of Way Department has handled many excess parcels of land and changes of access.

The Materials and Research Department inspects the material that is used to construct and maintain the highways in District 10.

Materials and Research has expanded its office force by one aggregate inspector and one seasonal employee; currently there are 12 employees in the department.

The department has many projects where employees are performing independent assurance sampling (IAS) and federal-aid sampling and testing (FAST). They verify that the job control or acceptance inspector knows and follows proper test procedures and that the equipment being used for acceptance testing is working correctly. This testing is performed only on federal-aid projects.

The district soils and geology technologist has completed six soil surveys, sampled 10 quarries and investigated numerous slides.

The Materials and Research
Department is helping on a statewide
research project called "Life Expectancy
Determination of Corrugated Metal
(CMP) and Reinforced Concrete Pipe
(RCP)." The project will develop a
comparative analysis of these two types
of roadway crossroad drainage pipe.

Materials and Research Department personnel have inspected various materials for the district Maintenance Department such as glass beads, brush and weed killers, grader and maintainer blades, sodium and calcium chloride for ice control, paint, anti-freeze, gear oil and grease, hydraulic fluid, lubricating oil, asphalt and various aggregates.

#### **Materials Inspected**

The Materials and Research Department has inspected the following quantities of materials:

\*aggregates — 1,292,225 tons;

\*cement — 46,162 tons;

\*asphalt — 7,147,751 gallons;

\*black and epoxy coated reinforcing steel — 1,307,140 pounds;

\*corrugated metal pipe — 24,122 linear feet;

\*reinforced concrete pipe — 11,155 linear feet;

\*reinforced concrete drop inlets — 166 each;

\*concrete flared end sections — eight each;

\*concrete toe walls — four each;

\*concrete manholes — 11 each;

\*reinforced concrete I-girders — 258 each;

\*reinforced double tee-girders — 127 each; and

\*reinforced bridge deck planks — 1,720 each.

The Design Department has 43 employees with five design squads and seven field survey employees.

#### Plan Production

Twenty-two projects totaling 39 miles were let for contract during fiscal year 1989 at a cost of \$23,817,000. Thirteen design plans were completed and made ready for contract during fiscal year 1989. These plans totaled 54 miles at a cost of \$20,675,000. In all, the district handled 35 design plans costing \$44,492,000 for a total of 93 miles.

Projects are included on all systems and cost from less than \$50,000 to more than \$6,000,000. Seven new bridges and 12 bridge rehabilitations are included. This work involves about 65 miles of resurfacing at a cost of about \$15,000,000.

Not included in the above tabulation are plans for 132 miles of maintenance contract leveling course projects costing more than \$2,044,000. When added to the above tabulation, the total construction cost of projects for which

plans were let for contract plus projects for which plans are complete total more than \$46,000,000. This figure does not include right of way costs.

The district Design Department has handled the off-system bridge program with 18 structures amounting to about \$3,000,000. Also Federal-Aid Urban (FAU) funds of almost \$1,000,000 have been processed during the past year.

Design personnel have helped with 15 groundbreaking and 9 ribbon-cutting ceremonies.

#### **Unusual Funding**

A Route 60 project in Stoddard County is being built through the cooperative efforts of many including the Stoddard County Commission, the city of Dexter, one private organization and the Missouri Highway and Transportation Commission.

The district has begun work in Wayne County to raise a portion of Route D above flood elevation. Funding for this improvement has come through the cooperation of the Mingo Job Corps, the U. S. Army Corps of Engineers and the Highway and Transportation Commission.

The Construction Department has five resident engineer offices and 80 employees. Sixteen employees work at Farmington, 17 at Cape Girardeau, 16 at Sikeston, 17 at Poplar Bluff and nine at Kennett. There is one district final plans and reports processor.

#### Construction

Sixty projects were completed at a cost of \$17,508,409.

Major active projects totaling \$44,279,707 are as follows:

\*Route 53, two projects in Butler and Dunklin counties — \$4,423,375;

\*Route 60, three projects in Stoddard County — \$12,343,030;

\*Route 32, relocation in St. Francois County — \$2,446,773;

\*Route 51, relocation in Perry County — \$3,535,583;

\*Route 412, three projects in Dunklin



Like Tom Sawyer, District 10 Maintenance Worker Don Riley knows it's a priviledge to be occupied with a paint brush.

County - \$2,109,294;

\*Interstate 55, two projects in Cape Girardeau and Scott counties — \$4,000,000;

\*Route 34 in Bollinger County — \$3,000,000;

\*Route NN in Dunklin County — \$1,007,052;

\*Route U in Cape Girardeau County — \$1,017,006;

\*Route 61 in Cape Girardeau County — \$2,669,750;

\*active minor supplementary and primary projects — \$2,896,820; and

\*asphalt leveling projects — \$4,831,024.

The Maintenance and Traffic Department has 12 areas and 36 subareas plus special crews in Sikeston with about 360 employees.

The district ranks first in highway miles and third in land area. District 10 has 198 miles of interstate, 742 miles of primary and 2,918 miles of secondary roads.

The following is the breakdown by county of the 1,366 state highway system bridges maintained by District

# district 10 continued

# district 10 continued

District 10 Maintenance Worker Paula Fivecoat controls traffic on Route D near Hayti in Pemiscot County. 10: Bollinger — 61; Mississippi — 62; Ste. Genevieve — 64; Butler — 109; New Madrid — 142; Scott — 97; Cape Girardeau — 140; Pemiscot — 118; Stoddard — 161; Dunklin — 107; Perry — 50; Wayne — 117; Madison — 60; and St. Francois — 78.

In the past year, the district resurfaced 135 miles of highway with 1-inch, machine-laid hot mix leveling course. Maintenance forces resurfaced about 315 miles of road with a cold mix leveling course. District 10 used 75,000 tons of mix to patch and make routine surface repairs. It also mowed 43,000 acres of right of way.

District 10 also administers the Adopt-A-Highway program in its region. As of June 30, 1989, the district had enrolled 53 groups in the program.

Maintenance and Traffic employees

installed five new signals and replaced two signals. There were 15 new mobile radios added to the fleet.

Snow and ice removal operations were below normal because of a mild winter. Roadway flooding was above normal; weather and other nature-related repairs were about normal.

The District 10 Equipment and Procurement Department has 34 people that maintain and repair more than 700 pieces of equipment. This district built the first shouldering machine that was demonstrated in the Innovation '88 competition at Sedalia. The unit won first place in the competition. Besides normal equipment maintenance, there have been several equipment modifications implemented.

The procurement section is staffed by three stockroom personnel who issue local purchase orders and orders for parts and supplies on requisitions or job tickets, check commercial invoices against purchase orders and code items for payment. They also post inventory records making sure they balance monthly, charge labor from job tickets, prepare garage invoices and keep tire, battery, gas, oil and other records for the district.

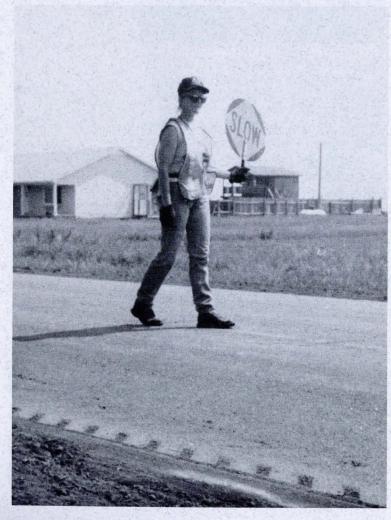
### Special Recognitions

Harvey Graham of the Sikeston resident engineer's office received an Employee Suggestion System award for his suggestion to put fire extinguishers on school buses.

Delane Davis of the Campbell Maintenance Building received an Employee Suggestion System award for her recommendation to use lag screws instead of bolts when attaching signs to wooden posts.

Charles Swallows of the Dexter Maintenance Building received an Employee Suggestion System award. His suggestion was to add reflective tape on the inside bottom of truck doors.

District 10 honored four employees for 40 years of service, five for 35 years of service, eleven for 30 years of service and nineteen for 25 years of service in



November 1988. For the first time, employees with 10, 15 and 20 years of service were honored at a reception. The district recognized 32 employees with 10 years of service, 27 with 15 years of service and 17 with 20 years of service. In all, 115 employees were recognized.

bridge and historic photograph display. The district office held an open house.

Music entertained the guests, and more than 120 door prizes were given away.

#### First-Aid Training

As part of the department's concern for the health and welfare of its employees, District 10 has participated in an in-house cardiopulmonary resuscitation (CPR)/first-aid training sponsored by the American Red Cross. This district has six certified instructors who are holding classes to train 36 other employees. The district's goal is to have a trained employee in every District 10 work group.

#### Employee of the Month

District 10 had the first MHTD Employee of the Month in August 1983. Highway Maintenance Supervisor Charles Archer of Kennett received this honor.

Maintenance Crew Member James D. Grindstaff of the Jackson Maintenance Building was the March 1984 Employee of the Month.

The late Arnold N. Holt of the Kennett construction office received this honor in March 1986.

Highway Maintenance Supervisor Henry Horton Jr. was the November 1986 Employee of the Month. He has since retired.

Maintenance Crew Member Wilma Duniphan of the Silva Maintenance Building was honored as the December 1988 Employee of the Month.

#### FAMILY DAY

District 10's FAMILY DAY was June 3, 1988. About 950 guests attended the evening meal and were served a meal prepared by district employees. Employees also set up displays showing the district's types of work and equipment. The day also featured a

district 10 continued



# divisions

# the bridge division

he Bridge Division is responsible for the design, estimating and special provisions, rating and shop inspection of the state highway system bridges.

During fiscal year 1989, the division completed for letting 89 new bridge and retaining wall designs. Of this number, 64 were designed for major system routes and 25 for supplementary routes.

The total length of new structures contracted during the fiscal year was 9,669 feet at a cost of \$35,926,824. Of these amounts, 5,447 feet were contracted at a cost of \$7,559,277 for the supplementary system.

Major structures contracted during the fiscal year include construction of the deck for approach spans one, two and six through 18 over the Missouri River at Jefferson City at a contract cost of \$1,590,510. The piers for units four and five with steel girders for unit five over the Missouri River, Route 115 at St. Charles, were constructed at a contract cost of \$13,620,419.

Besides new structure designs, the

division prepared 95 repairing, widening or extending designs for 17,145 feet of existing bridges at a cost of \$15.033,739.

Steel fabrication inspectors made 375 trips to 27 fabrication shops to inspect bridge steel, and 259 sets of shop drawings were processed.

The division was involved in liaison with consulting engineering firms on four major bridge projects.

A quality circle was active and was instrumental in solving at least 11 problems during the fiscal year.

In addition to structure design, the division has been rating county and/or municipally owned bridges as part of the Federal Highway Administration Bridge Replacement and Rehabilitation Program.

Division personnel reviewed programming eligibility for 99 proposed bridge replacement projects, 91 preliminary layouts and 129 sets of plans, specifications and estimates for bridge structures on the Federal Off-System Bridge Replacement and Rehabilitation and Federal-Aid Urban Programs.

This half-built bridge on Gist Road in St. Louis soon will carry traffic over Interstate 270.



he following summary of activity by the Chief Counsel's Office covers the fiscal year July 1, 1988, to June 30, 1989.

### (1) Condemnation Cases

- a. Forty new petitions were filed from July 1, 1988, to June 30, 1989, involving 201 tracts of land.
- b. Disposition was effected in 63 cases, and 84 exceptions were filed.
  - c. There were 23 jury trials reported.
- d. The sum of \$1,380,747.62 was collected on final judgments where a return from the commissioners' award was due the Missouri Highway and Transportation Commission.

# (2) Administrative Hearings

- a. Outdoor Advertising There were 28 hearings involving 65 signs conducted.
- b. Utility Relocation Two hearings were held.
- c. Relocation Assistance No hearings were held.

# (3) Highway Beautification Cases

- a. Outdoor Advertising Nineteen cases were opened; six were closed.
- b. Junkyard Cases Eight cases were opened; seven were closed.

# (4) Tort Cases

- a. General Liability Thirty-six cases were filed against the commission, and 14 were closed.
- b. Fleet Vehicle Liability Fifteen cases were filed against the commission, and three were closed.
- c. Property Damage One case was filed by the commission, and 10 were closed.
- d. Inverse Condemnation Two cases were filed against the commission, and one was closed.
- e. Workers' Compensation Cases —
   There were 120 claims filed with the

Missouri Division of Workers' Compensation, and 66 claims were closed.

# (5) Contractor Cases

Five cases were filed against the commission, and nine cases were closed.

# (6) Miscellaneous Cases

Fourteen cases were filed against the commission, and 10 were closed.

# (7) Federal Cases

Six cases were filed against the commission, and five were closed.

# (8) Retirement Board Cases

One case was filed against the commission, and none were closed.

# (9) Medical Insurance Plan Cases

One case was filed against the commission, and two were closed.

# (10) Annexation Cases

Seven cases were filed against the commission, and 11 were closed.

# (11) Miscellaneous

There were many contracts prepared and reviewed, legislative bills reviewed and legal opinions rendered.

the chief counsel's office HTD's Construction
Division administers
the Missouri Highway
and Transportation

Department's (MHTD) construction contracts. After the commission awards a contract, MHTD issues a notice to proceed to each successful contractor and establishes contract finances. The division's field liaison engineers inspect each project so the department keeps aware of the construction progress.

Today, construction work continues on Interstate Route 270 and Route 40 in the St. Louis area and Route 71 in the Kansas City area. Besides this, construction continues on a bridge over the Missouri River at Jefferson City and on the Route 40 bridge crossing the Missouri River between St. Charles and St. Louis counties. Construction was begun on the Route 115 bridge crossing the Missouri River between St. Charles and St. Louis counties.

Interstate system contracts involved upgrading existing dual facilities to interstate standards and implementing the latest safety features. Approximately 81 miles of interstate road are being rebuilt or brought up to the latest safety standards.

The division resurfaced 1,500 miles of existing pavement with asphaltic concrete during fiscal year 1989, and numerous bridges were rehabilitated.

The Off-System Bridge Repair Program, which the division administers, has increased during this fiscal year.

Primary and supplementary system contracts involved new construction, widening and resurfacing projects and bridge replacements. The contracts included rural and urban construction costs, and projects financed with federal-aid or with 100 percent state funds.

The division kept the cost of inspecting construction projects low by upgrading equipment and holding more employee training.

the construction division

System Federal-Aid Funds	Awarded In Fiscal 1987	Awarded In Fiscal 1988	Awarded In Fiscal 1989	Total
Interstate		7	38	45
Primary	1	19	113	133
Supplemental Off-System		2	24	26
Subtotal	1	28	175	204
100 percent State Fund	ds			
Interstate	<b>学等是提供的</b>	1	0	1
Primary		4	91	95
Supplemental		2	82	84
Subtotal		7	173	180
Total Projects	1	35	348	384

he Design Division, formerly called the Surveys and Plans Division, prepares the Missouri Highway and Transportation Division's (MHTD) roadway improvement studies and plans and handles the letting of highway project contracts.

MHTD holds meetings and formal hearings to explain the need and purpose of highway improvements and to obtain public comment. Coordination with local, state and federal agencies is required.

During fiscal year 1989, the division obtained tentative location approval on 38 highway improvements holding 24 formal location and design public hearings and several public meetings.

As part of its duties, the Design Division uses aerial photography to conduct photogrammetric surveys early in a project. Field surveys supplement this work and give basic information for plan development.

The department began using a Computer-Aided Design and Drafting (CADD) system with approval from the Missouri Highway and Transportation Commission in December 1987. Mainframe computers were installed at the Main Office and District 8, the Springfield area, by July 1, 1988. The Design Division and District 8 used the district's computer and eight workstations to complete pilot projects on three highway projects. Designers using the CADD system helped complete several ongoing projects.

The CADD system seems beneficial to the highway designer. The equipment purchase cost can be recovered within six years. In December 1988, the commission agreed to let MHTD start the second phase of CADD implementation. During the calendar year 1989, MHTD will install computers and 112 workstations in districts 3, 4, 5 and 6 for 28 highway design squads.

Equipment contract cost for stage one was \$3 million, and stage two will cost \$4.2 million.

The Design Division coordinates implementing the CADD system in district offices. A department-wide training

program for design employees is being developed.

This division administers the department's value engineering program.

Through the program, department personnel apply the value engineering (VE) discipline on selected projects, items, procedures and processes to reduce cost and improve productivity.

During 1988, MHTD completed VE studies on 11 construction projects and the department's construction vehicle purchase program and saved an estimated \$8.8 million. For each dollar of expense to complete the studies, the department saved \$113. In all, 45 employees were trained in value engineering.

The Design Division assesses environmental impacts for each project. This includes air quality evaluation, noise studies and cultural, social and economic considerations. The division finished cultural resource survey reports on 70 projects and reviewed more than 50 in-house.

Before letting highway improvements, the department acquires right of way, makes arrangements for utility adjustments and obtains permits and licenses from state and federal agencies. The division obtained approval of detail plans for right of way acquisition on 90 projects.

The Disadvantaged Business Enterprise (DBE) program lets businesses owned and controlled by socially and economically disadvantaged individuals or women participate in contracts or subcontracts financed in whole or in part with federal funds. When the Surface Transportation and Uniform Relocation Assistance Act of 1987 passed, women-owned businesses were added to the definition of a Disadvantaged Business Enterprise. DBE firm participation during fiscal year 1989 was \$25,423,760.

During the fiscal year, the department had one project that used Bridge Discretionary Funds totaling \$4,172,400. Bridge Discretionary Funds help replace major bridges without using normal federal-aid apportionments.

the design division The Design Division also administers several federal-aid programs that provide funding for cities, counties and rail-highway crossing safety improvements.

The Federal Aid Urban (FAU)
Program provides federal funding for
streets and highway construction in
cities and urban areas with more than
5,000 people. Approximately
\$7,620,791.00 was obligated in Missouri
cities for this program. The FAU funds
generally are used to finance 75 percent
of the cost of eligible projects with local
jurisdictions providing 25 percent matching funds. During fiscal year 1989, 10
projects were approved for construction
under this program.

The FAU Bridge Replacement program financed seven bridge replacement projects in urban areas, at a cost of approximately \$5,670,947. Bridge replacement funds are used to finance 80 percent of the cost with local agencies responsible for the remaining 20 percent.

The Off-System Bridge Rehabilitation and Replacement Program provides federal funds for bridge repair and replacement on county roads not on a federal-aid system. Approximately \$14,132,173 was obligated for projects qualifying for this program with counties providing 20 percent matching funds.

During the fiscal year, 49 projects were approved for preliminary engineering charges; 51 were approved for construction. And 67 projects were placed under contract by the counties.

Eleven bid openings were held during the fiscal year; projects totaling \$278,440,680.00 were placed under contract. An average of 5.2 bids were received per project tabulation.

Prices decreased during the past year, with the Missouri average composition cost index being 172 compared to base year 1977. The 1988 cost index reflects a 10.2 percent decrease when compared with the 1987 cost index of 191.6.

# The following table provides a resume of projects awarded between July 1, 1988, to June 30, 1989.

# design continued

1988 Report	Awards	Miles	Projects
Interstate System	\$ 58,681,029	196.2	56
Primary System	138,155,419	293.6	113
Supplementary System	56,406,940	86.8	76
Maintenance Work	15,291,379	1049.5	174
Off System (county bridges)	0	0.0	0
Federal Aid Urban (on state system)	9,905,913	19.6	11
Totals	\$278,440,680	1645.7	430

he Equipment and Procurement Division procures and maintains an equipment fleet that efficiently and effectively lets the Missouri Highway Transportation Department (MHTD) carry out its functions. As of June 30, 1989, the division was maintaining 6,103 rental units such as passenger cars, trucks, carryalls, tractors, mowers, motorgraders and others.

Fuel used in the fleet during fiscal year 1989 was down approximately 6 percent compared to fiscal year 1988. The average price of gasoline decreased 0.5 percent, and diesel fuel dropped 4.9 percent.

The department needed 5,733,061 gallons of gasoline, 92,788 gallons of kerosene and 2,704,222 gallons of diesel fuel to operate the fleet this fiscal year. In addition, 15,983 gallons of anti-freeze, 98,506 gallons of lubricating oil, 44,964 gallons of hydraulic oil and 89,917 pounds of multi-purpose gear oil and lithium grease were used. The department contracted for tires and tubes costing \$1,109,527.55; tire chains costing \$21,161.69; and shop equipment, parts and supplies totaling \$11,935,426.69 during fiscal year 1989.

This division also provides the tools, supplies and materials required in the department's operations. In an effort to

give better service to the user division, annual contracts for many items are being used instead of periodic purchases.

During fiscal year 1989, the department continued purchasing batteries, pneumatic tires and tubes for direct shipment from the supplier to each district office. This saved in freight costs.

To save money various supplies and equipment are produced at the headquarters garage when labor is available. On behalf of the department, the Equipment and Procurement Division began a freight and internal mail delivery during the spring 1988 and saved about \$100,000 the first year.

the
equipment
and
procurement
division

# Materials purchased for highway maintenance during fiscal year 1989 are as follows:

Various Types of Asphalt	49,580,164 gallons
Gravel/Stone/Chat	336,075 tons
Paint	798,177 gallons
Reflectorizing Spheres	3,477,000 pounds
Sodium Chloride	140,302 tons
Calcium Chloride	4,650 tons
Agricultural Seed	56,827 pounds
Treated Wood Sign Posts	11,514 each
Steel Sign Posts	10,646 each
Grader Blades	327,575 pounds

he accounting and expenditure control for the Missouri Highway and Transportation

Department (MHTD) is the Fiscal

Service Division's responsibility. The division processes and records the department's financial transaction records.

Based on anticipated revenues and disbursements, the division prepares legislative budget requests and annual internal budgets. It reviews payment documents for accuracy and priority of payment and determines if funds are available before recording and certification for payment.

The division processed 205,483 checks during fiscal year 1989. Disbursements from highway funds for highway and transportation functions equaled \$728,651,693.57. Disbursements by other state departments from highway funds equaled \$118,296,003.35. Total disbursements from all funds equaled \$858,523,204.66.

The department is self-insured for workers' compensation and automobile liability. The Fiscal Services Division risk management section manages this program. A contracted administrator processes the claims. There were 1,031 workers' compensation cases and 672 automobile liability cases processed during the fiscal year.

The risk management section also administers the regulations and policies of the Missouri Highway and Transportation Department and Missouri State Highway Patrol Medical and Life Insurance Plan, which includes the Optional Life Insurance Plan. As of June 30, 1989, there were 10,039 health insurance plans; 7,774 state furnished life insurance plans and 7,852 optional life insurance plans in force.

From July 1, 1988, through June 30, 1989, there were 69,945 health claim payments with \$16,161,139.11 paid in benefits. During the same period, there were 25 life claims under the state furnished plan and 41 life claims under

the optional life plan with \$375,000 and \$1,506,500 in death benefits to survivors. The property damage recovery unit collected \$955,333.02 involving 1,742 claims.

During fiscal year 1989, the safety coordinator position was relocated to the risk management section. The department created safety officer positions in the Kansas City and Springfield district offices. The St. Louis district office has had a safety officer since 1987.

Fiscal Services is responsible for the Highway Employee and Highway Patrol Retirement System accounting and payroll records. From July 1, 1988, through June 30, 1989, the division processed 36,114 retirement system benefit payments totaling \$24,630,286.06.

tbe fiscal services division



he Missouri Highway and Transportation Department (MHTD) created the

Information Systems Division in March 1988. This reorganization accompanied the department's increasing automation. In forming the division, MHTD combined the data processing section, the engineering programming section from the Design Division (then called Surveys and Plans) and a programmer from the Planning Division.

Information Systems provides mainframe computing facilities, application programming, data base facilities, personal computer and office automation support and data entry for the department. Data communications to all district offices is provided, too.

The department's foremost automation effort was installing hardware and software for the first stage of Computer Aided Drafting and Design (CADD). This installation included workstations for the headquarters and District 8 offices and one resident engineer's office. This initial installation allowed the department to develop standards and procedures and provided a training base for later installations.

The second stage is progressing. The division is placing workstations in four more districts and has added seven workstations at the Main Office.

The department upgraded its mainframe computer and acquired a Data Base Management System. This data base provides a central common data storage and retrieval system that will be the heart of future applications. The first major application will be the department's inventory system.

MHTD's office automation efforts include a statewide mail and calendar system on the mainframe, a local area net (LAN) that connects headquarters personal computers and a link that lets LAN workstations have mainframe access. Communication with other state agencies is available.

This division uses two off-site locations. The data entry section was relocated in remodeled facilities at the

Headquarters Garage. The division also operates a training room at Highway 50 and Eastland Drive in Jefferson City. Both units communicate with the mainframe through telephone lines.

Programming support included revising payrolls, creating on-line programs to give quick access to data, converting printed output to microfiche and installing a Bid Analysis Management System.

MHTD has nearly 250 personal computers and 150 terminals with access to the central computer. Almost 10,000 jobs per month are processed through the mainframe.

the information systems division

the internal, review, audit and systems division

his division has three areas of responsibility in the Missouri Highway and Transportation Department's (MHTD) cost accounting systems. The first area encompasses operational reviews at the division and district level in such activities as construction, right of way, preliminary engineering, administration, financial management, information systems, planning and transportation. These reviews determine if division and district operations comply with published department

procedures and state and federal regulations. This insures the integrity of developed and incurred costs.

The division's second area of responsibility involves auditing final invoices for utility and railroad relocations, federal-aid urban (FAU) projects, bridge replacement off-systems (BRO) projects, transportation grants and miscellaneous billings to the department. The third area includes developing, revising and maintaining the department's accounting systems and written operating and coding procedures.

Audit to	tals from July 1, 1988, to June	30, 1989
54	Utilities	\$2,687,102
42	Railroads	\$3,322,539
13	FAU	\$9,425,611
86	BRO	\$8,486,557
24	Miscellaneous	\$2,459,832
124	Pre-Audit Contract Reviews	\$7,293,784
343		\$33,675,425

the materials and research division

he quality of materials for construction and maintenance of the state highway system is the primary responsibility of the Materials and Research Division.

District Materials and Research employees coordinate field inspections for the sampling, testing and approval of materials. Employees at the central laboratory in Jefferson City test and evaluate materials used in Missouri's highways and bridges. This division's tasks include material specifications preparation, exploratory subsurface soundings, pavement type selection, soil and condition surveys, aggregate quality control, portland cement and asphaltic concrete mixtures design and control, special investigations and research.

The central laboratory is an approved facility inspected regularly by national

inspection agencies such as the Cement and Concrete Reference Laboratory (CCRL) and the American Association of State Highway and Transportation Officials (AASHTO) Materials Reference Laboratory. The CCRL inspected the laboratory in November 1987 and gave it an excellent rating.

Many materials routinely tested in the field also are tested in the laboratory to insure statewide uniform testing procedures. The laboratory also tests materials requiring special equipment and procedures. Efforts to automate some laboratory tests through digital data acquisition have continued.

The division has developed new asphaltic concrete mixtures to help prevent premature rutting. The Associated General Contractors of Missouri Inc. (AGC) and the Missouri Limestone Producers Association

attended a seminar on the new mixtures.

New product evaluation is an important division function. The need to make quick pavement and bridge repairs has generated "fast-setting" concrete patching materials that are being evaluated.

This division also obtains and interprets the subsurface information needed to design highways and bridges. Drilling equipment and crews from the division's headquarters in Jefferson City obtain the data. Crews and equipment are dispatched throughout the state.

Personnel also investigate various geotechnical matters including foundation stability and settlement of embankments; slide corrections; subgrade and base stabilization; environmental studies; bridge and wall foundations; sinks and mine subsidence; and the use of fly ash. Special investigative techniques include electrical resistivity, down-hole photography and sonar, and field permeability testing.

The department continues to support the Strategic Highway Research Program (SHRP). To date, SHRP has approved 19 test pavement sections in Missouri. MHTD also has submitted for SHRP's approval many special construction and maintenance effectiveness test sections.

A department representative serves on the SHRP Advisory Committee for Concrete and Structures. The department has established an MHTD-SHRP Coordinating Committee to inform employees about SHRP's work.

The Materials and Research Division has a representative on a newly formed technical research committee, which reviews research work and invites problem statements on research from employees statewide.

July 1, 1988, through June 30, 1989, a total of 19,380 samples were tested, including those of an experimental or investigative nature.

# Amounts of commonly used materials tested and approved are shown in the following table.

Aggregates	12,569,313 tons
Cement	550,513 tons
Reinforcing Steel	24,803 tons
Culvert Pipe	
Corrugated Metal	140,005 linear feet
Reinforced Concrete	169,036 linear feet
Vitrified Clay	212 linear feet
Joints - Bituminous, Fiber	150,714 linear feet
Joints - Rubber	33,186 square feet
Joints - Metal	80,573 linear feet
Guard Rail	222,819 linear feet
Posts, Metal	74,103 posts
Precast Units	
Median Barriers	1,722 units
Concrete Bridge Beams	1,258 units
Concrete Inlets	1,411 units
Concrete Manholes	233 units
Lumber and Square Posts	186,387 board feet
Piling and Round Posts	1,060 linear feet
Bituminous Material	
Cutback	17,314,348 gallons
Penetration	8,657,176 gallons
Emulsified	46,171,596 gallons
Asphalt Cement	24,047,706 gallons
Paint	830,821 gallons

materials and research continued

# tbe maintenance and traffic division

he Maintenance and Traffic Division is responsible for the maintenance and traffic operations of the 32,285-mile state highway system. The division also maintains 20 rest areas along the interstate system, 70 roadside parks on the primary and supplementary

highways and 385,000 acres of highway right of way.

Since 1974, the department has been building commuter parking lots along many of the high-traffic volume highways to conserve energy. As of March 1989, there were 92 parking areas with a total of 5,403 parking spaces.

One of the division's major expenses is maintaining low-type bituminous surfaced roads. In calendar year 1988, the department surfaced 3,273 miles of low-type roadway under the maintenance leveling course program. In addition, 1,619 miles were resurfaced by contract under the contract leveling course program, and 25 miles of roadway were surfaced under the contract sealcoat program.

In 1986, the department began installing liquid calcium chloride or liquid magnesium chloride dispensing units at maintenance facilities along high-volume interstate and primary routes. Liquids are applied to salt and other abrasives to make these materials more efficient in removing snow and ice from the roadway. In 1988, the department added 34 locations under the program.

In 1988, the department, cooperating with the Department of Corrections and Human Resources, employed incarcerated personnel in maintenance activities. These crews perform labor-intensive duties such as landscape planting and maintenance, brush removal and erosion control.

By using incarcerated people, the department benefits by having an economical labor pool complete duties that would be neglected. The incarcerated personnel benefit by participating in a typical work environment. The inmates are from

minimum security institutions, have no history of escape and are within two years of release.

The division hosted "Innovations" 88," an equipment fair, in October 1988. Department field employees, supervisors and city and county maintenance people gathered to share ideas on equipment modifications and to view new department equipment.

Along with the University of Missouri-Columbia, the division sponsored a one-day training program on pesticides for 355 employees. The program trains employees to properly use pesticides and should improve the safety and effectiveness of pesticide use on department right of way.

During this fiscal year, Missourians showed much interest in the department's Adopt-A-Highway program. This program, introduced in 1987, increases public awareness of environmental problems along Missouri highways by letting the public adopt highway sections to mow, beautify or clean-up. By April 1989, there were 1,000 adoptions. As of June 30, 1989, there were 1,596 adoptions covering 2,513 miles of state highways. Most adoptions are for litter control, but more than 75 adoptions are for beautification plantings.

The public's desire to improve the appearance of highway right of way helped develop the department's Growing Together program. Growing Together is a cooperative effort between the department, state and local governments and private groups to enhance the looks of state highways. MHTD and the departments of Conservation and Corrections and Human Resources help local agencies and groups in beautification projects such as landscaping interchanges and intersections.

In the Growing Together program, the groups can plant shrubs, trees, flowers and other greenery. Local city or county governments propose areas to be developed. After MHTD approves the area, the local government or civic group funds the project. The department

helps with design and bidding.
When possible, incarcerated
people plant trees, shrubs and
flowers. The Conservation
Department gives seedlings to plant
along the beautification area borders.
There are active projects in Jefferson
City, Joplin, Springfield, Kansas City, St.
Louis County and Cape Girardeau.

MHTD issues overweight and overdimension permits through this division. The permits insure that vehicles exceeding the legal height and weight limits do not cause structural damage to bridges and pavements. There were 92,570 overdimension, overweight and overdimension/ overweight special permits issued during the fiscal year. District offices issued 17,690 or 19 percent of the permits. Included in the total were 2,359 permits issued to governmental agencies or subdivisions at no charge.

Division personnel do routine inspections of all span-type bridges on the state highway system. Besides routine inspection, the hanger pin assembly unit on 30 bridges was ultrasonically tested to detect pin failures.

In 1989, the division purchased a second underbridge inspection unit called a "Snooper." Both Snoopers will

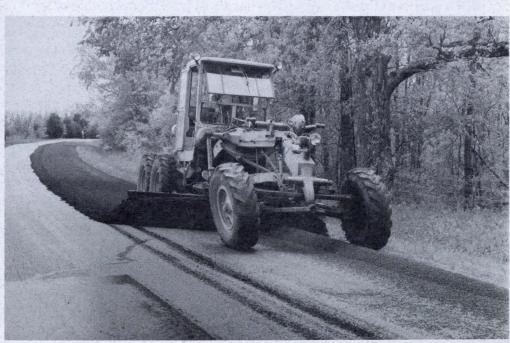
begin fracture critical bridge member inspections in fiscal year 1990.

A school to train off-system bridge inspectors was held in October 1988; 55 inspectors attended. Division repair crews completed structural repairs on 160 bridges, and paint crews painted 150 bridges.

Activities funded from 402 Program funds under 3+ Standards of the Missouri Highway and Safety Program and coordinated by the Missouri Highway and Transportation Department are as follows.

\*Bridge Engineering Assistance Program — This program helps political subdivisions obtain information on the structural adequacy of bridges under their jurisdiction. Two consultants retained by the Missouri Highway and Transportation Commission perform these services. The consultants determine structural adequacy, establish posted weight limits and develop priorities for bridge repair or replacement. Structural adequacy reports and inventories were conducted on 46 bridges from October 1987 to September 1988 at an average of cost \$1080 per bridge.

\*Traffic Engineering Assistance Program — This aids political subdivisions who have traffic engineering maintenance and traffic continued



When Missouri motorists see this sight, they see their tax dollars at work. Here Maintenance workers from the Jenkins Maintenance Building in Lawrence County are laying asphalt on a cool May day.

problems that need review but don't have personnel to do these reviews. Two consultants retained by the commission perform the service; they completed 29 studies in political subdivisions from October 1987 to September 1988. The average cost was \$3100 per study.

During the calendar year 1988, six intersections of the state highway system were signalized by permit, 25 intersections by maintenance forces and four by maintenance contract.

Making existing traffic signals modern continued throughout the state. Maintenance forces upgraded or installed new traffic control equipment at 39 existing signalized intersections. The division continued interconnecting various traffic signals for traffic progression. New equipment to control and monitor traffic signals from district offices was put in service. The operation of a new centralized arterial master signal control system was taken over after construction; it is the state's first system of this type.

Contracts were also let to replace many older, two-way mobile radios and to expand the use of mobile radios in various divisions and district positions. The program to replace all fixed relay station equipment continues.

MHTD opened the new headquarters sign shop May 1, 1988. With its modern equipment, the \$1.1 million shop has increased sign production and quality. Since May, more than 221,000 new signs have been made. MHTD's reclamation plant salvaged about 85,000 signs.

Sheltered workshop employees are used by the sign shop to insert reflectors into the button copy letters. This process saves time and money in sign production.

In calendar year 1988, the department placed 85,600 miles of centerline, laneline and edgeline stripes using almost a half million gallons of paint. To complete the work, the department used 17 over-the-road stripers. The operation includes a nurse truck, attenuator trucks and a lead truck.

During this striping season, the first

bulk paint storage facility was started in Jefferson City. This assembly consists of two bulk paint tanks that can hold 10,000 gallons each of white and yellow paint. In April 1990, the department will set up two more bulk paint operations.

In calendar year 1988, the department placed about 18,400 miles of no passing zones. In 1989, MHTD will purchase five digital no passing zone striping machines to aid in the determination of no passing zone striping on all routes currently maintaining a centerline stripe. MHTD also will purchase two new stripers to use with the new bulk paint assemblies in the next striping season.

The division coded and placed in the accident data record system 76,063 accidents on the state highway system during the calendar year 1988. The Missouri State Highway Patrol and about 565 city and county enforcement agencies provided the reports.

The division continued its 120/ Medium Improvement Program in 1989, investigated 13 locations where more accidents than normal had been occurring and implemented corrective measures at the spots.

Maintenance and Traffic investigated 100 locations that had 20 or more accidents throughout a three-year period and evaluated countermeasures for possible funding under Section 209 of the 1973 Federal Highway Act. This division provided the Planning Division with 38 locations to be put on the Right of Way and Construction Program at an estimated cost of more than \$5 million.

The 40th Annual Traffic Conference was held April 24-26, 1989, in Columbia. County, city and state and federal government people attended this two-day conference on solving traffic problems. Before the conference, Federal Highway Administration (FHWA) personnel presented a Design and Operation of Work Zone Traffic Control workshop.

In 1988 and 1989, the division monitored peak period freeway traffic in the St. Louis and Kansas City areas. This surveillance program identifies the

# maintenance and traffic continued

location and severity of traffic congestion on about 170 miles of urban freeways.

A low capital improvement program was implemented on westbound Interstate 70 in the St. Louis area between Jennings Station Road and Lucas and Hunt, which relieved a longtime traffic congestion problem. Other projects implemented to relieve congestion were an alternating one-way operation on the Route 115 bridge over the Missouri River at St. Charles and the re-striping of I-70 westbound on the Missouri River Bridge at St. Charles for a five-lane operation.

To improve freeway monitoring, the department purchased hand-held computers to monitor traffic flow and print traffic speeds for districts 4 and 6. These computers also monitor the progression of signalized roadway

systems.

Property owners removed 472 billboards and state forces removed 12 billboards because of outdoor advertising laws and regulations during calendar 1988. MHTD issued 765 new permits for billboards and renewed 5961 permits under these regulations. Also, the department issued 217 licenses for junkyards and 12,540 driveway and excavation permits during the calendar year.

# maintenance and traffic continued

### **Material**

Various Types of Asphalt Sodium Chloride (winter 1988-'89) Calcium Chloride (winter 1988-'89) Liquid Calcium or

Magnesium Chloride (winter 1988-'89) Seed

Maintainer Blades

### Amount

49,580,000 gallons 140,302 tons 4,650 tons

> 329,124 gallons 60,580 pounds 45,633 pounds

he Personnel Division provides assistance to the Missouri Highway and Transportation
Department (MHTD) in matters such as employment, college recruiting, employee training and development, wage and salary matters, personnel policy and affirmative action administration, employee relations and personnel records and statistics maintenance.

The division develops and implements programs to ensure that competent job applicants seek employment with the department, that employees are properly trained and that fair and productive working conditions exist.

The department is an equal opportunity employer and considers affirmative action a priority. The Personnel Division and MHTD's districts strive to attract qualified minority and female applicants. The division monitors Equal Employment Opportunity (EEO) progress and keeps the headquarters office and districts informed.

New employee orientation and training is conducted through the department's supervisors, the Personnel Division and outside specialists. MHTD implemented an initial orientation checklist throughout the state that is completed for each new employee and designed a new employee orientation program to make employees familiar with the department's organization, policies, benefits and employee programs. The orientation program began at the Main Office and will be implemented throughout the districts.

Using MHTD employees as instructors, the department began a statewide cardiopulmonary resuscitation (CPR) and first-aid training program.

Employees often may attend training conferences and seminars related to their work. MHTD's operational divisions provide most technical skills training. The Personnel Division supplements the employee training by conducting supervisory training programs.

The department tries to maintain a positive work environment for high

the personnel division

# personnel continued

employee morale and motivation.
All personnel transactions are reviewed to guarantee equal and uniform salary administration and policy application.

The department initiated a statewide job study conducted by an outside consulting firm and the Personnel Division. The study evaluated the department's jobs and staffing levels and included an external salary survey. This was the first complete job review in the department since 1965.

In October 1988, the department added a district personnel officer in District 8, the Springfield district. Now districts 8, 4, the Kansas City area, and 6, the Kirkwood area, have district personnel officers.

The division processed 279 claims for unemployment compensation during the fiscal year and obtained 56 denials out of a possible 63 unwarranted compensation claims. The division did not protest 216 processed claims because the claimants were temporary employees who became unemployed through no fault of their own and were entitled to unemployment compensation.

The division maintains centralized personnel records. The personnel data is used for employee profile, employee trends and manpower planning analysis. Personnel record-keeping has been improved through computer applications.

The department had 6,045 salaried employees on June 30, 1989, in addition to 813 part-time and seasonal employees. The department hires temporary and emergency employees for such duties as snow removal.

The Personnel Division held preretirement seminars for headquarters employees and their spouses.

From July 1, 1988, to June 30, 1989, the division processed 252 employees for retirement. Fifty-nine were 55-to-59 years old with 30 or more years of service; six were between the ages of 55 and 59 with 15 or more years of service and one was between the age of 55 and 64 with 10 or more years of service. Also 138 employees between the ages of 60 and 64 with 15 or more years of

service were processed and 23 employees were 65 or older with four or more years of service.

Nineteen employees qualified for long-term disability, and two qualified for normal disability. Four vested members also elected to begin annuity benefits. The Highway Employees' and Highway Patrol Retirement System currently is paying benefits to 2,621 department retirees and survivors; 44 are long-term disabilities.

The average salaried MHTD employee has given almost 16 years of service to the department.

As part of its overall affirmative action program, the department encourages, develops and implements programs to insure that disadvantaged and women-owned business enterprises may participate in state and federally assisted programs.

The department has reduced selected contract sizes to provide more entry opportunities for smaller, less-experienced disadvantaged and womenowned firms. The department has also permitted joint ventures by disadvantaged and women-owned firms.

An updated list of disadvantaged and women-owned businesses in Missouri and the surrounding area has been distributed. It is categorized by area of experience, location and specific product or services. The list is sent to contractors qualified to bid on work and to political subdivisions having initiated Federal Aid Urban projects. The contractors and political subdivisions are encouraged to use disadvantaged and women-owned firms.

Bidders on construction projects in Missouri are required to certify whether they intend to subcontract a portion of the work. If so, bidders are obligated to take affirmative action in using disadvantaged and women-owned firms on the subcontracted portions.

Through the department's affirmative action efforts, \$27,502,684 in state and federally assisted contracts and subcontracts were awarded to disadvantaged and women-owned firms from July 1, 1988, to June 30, 1989.

he Planning Division's efforts in fiscal year 1989 focused on planning for the state's future highway system. To do this, the division collected and maintained financial and roadway information, determined existing and future highway needs and developed planned improvements and financial programs to meet those needs.

The programming and long-range planning section updated the department's highway needs study and developed long-range plans.

The division prepared the 1988 interstate, primary system and bridge service ratings and studied innovative financing methods. It also prepared and published the 1989 Highway Right of Way and Construction Program that shows the improvements scheduled for the next 14 years and also prepared an update on the progress of Proposition A.

The traffic section made approximately 4,000 vehicle counts and 150 manual classification counts on the 32,000 miles of state highways in calendar year 1988. Speed surveys to determine compliance with the 55-mph speed limit were conducted at 34 statistically selected locations throughout the state. Vehicle miles of travel increased 4.9 percent from 1987,

making 1988 the seventh year in a row of record increasing travel in Missouri.

Automatic vehicle classification and weigh-in-motion information was gathered at several locations for department information and for Strategic Highway Research Program (SHRP) data. Automated pavement condition survey information was used to develop MHTD's resurfacing program.

The division prepared an annual vehicle report for 1988. The report includes information on travel for all roads and streets in Missouri. Through roadside interviews with motorists, selected travel characteristics were gathered at six locations within the state. The information from these studies was used to determine needs and plan improvements for the locations.

The comprehensive planning process continued in the state's six urban areas. This process requires cooperation between the department and local jurisdictions and planning organizations. Through the process, the department can develop multi-modal, long-range plans and compile areawide improvement programs in the urban areas of Kansas City, St. Louis, Springfield, St. Joseph, Columbia and Joplin.

Cities of more than 5,000 population received assistance in updating their



Planning
Division
Cartographer
Jerry Kampeter
shows visiting
school children
how to make a
map.

51

the

planning

division

# planning continued

functional classification and federalaid systems. Information was compiled to update the National Highway Performance Monitoring System in urban areas.

Deterioration of the wearing surface of the Poplar Street Bridge across the Mississippi River in St. Louis required research to determine the best wearing service for the orthotropic steel plate. The result is a research study called the Evaluation of Wearing — Surface Systems for Orthotropic-Plate Bridge Decks.

To remedy the frequency and severity of accidents at high-risk locations, an updated of the manual on identification, analysis and correction of high-accident locations was initiated through the University of Missouri-Rolla.

The Technology Transfer Assistance Program has saved cities and counties much money. The cooperative purchasing of materials and equipment and the training of local agency employees are sources of savings.

The mapping section updated the county map inventory, mileage certification and printing of county maps on a five-year cycle. Other city maps were updated, and graphic and artist work was done for MHTD and other state departments. The division produced 2.5 million copies of the 1989-90 state highway map.

The division maintains historical data and projections of income and expenditures. Financial data is provided for cash management, legislative fiscal notes and various fiscal scenarios.

Historical project data including roadway information and construction costs are maintained. System data such as mileage and log miles are also kept.

he Public Affairs
Division keeps Missouri
Highway and
Transportation
Department (MHTD) employees and the
public informed about department
activities.

High public interest in highway and transportation continued this year, and the division responded by increasing the dissemination of information. To do this, the division used news releases, magazines, brochures, leaflets, fact sheets, films, exhibits and displays, radio and television programs and speeches.

Division personnel keep contact with the state's news media and routinely distribute them information.

During fiscal year 1989, the division prepared and distributed more than 100 news releases. Many articles, feature stories and photographs were supplied to magazines, newspapers and other publications. July 1, 1989, the division contracted with an external statewide newspaper clipping service to keep officials informed of MHTD coverage.

The division often helped in the groundbreaking and formal opening ceremonies of major road and bridge projects. Division personnel developed a variety of speeches and brochures, as well as the department's annual report.

The division monthly published and distributed the *Missouri Highway & Transportation NEWS*. The *MHTD NEWS* is the department's employee newspaper with a circulation of more than 9,500.

Per month, the division answered approximately 1,000 mail and telephone requests about maps, road information, routings, educational material and films.

The division supervised the distribution of more than one million highway maps, many of which were given out at the Missouri State Fair. Public Affairs personnel staffed the annual fair exhibit in the Highway and Transportation Gardens, a roadside park on the fairgrounds.

The division also administered a service award program for 10-, 15-, 20-, 30-, 35- and 40-year MHTD veterans.

the public affairs division he Right of Way
Division acquires
realty rights for the
construction and
improvement of state highways and
related facilities. It provides a relocation
assistance and payments program for
persons displaced by land acquisition. It
also disposes right of way no longer
needed for state highway purposes and
assists the office of the chief counsel in
preparing condemnation cases.

During fiscal year 1989, the cost of right of way acquired for highway construction totaled \$20,061,192.

The division acquired 706 parcels of land. This number includes 610 parcels acquired by negotiated settlement and 96 by condemnation, or 86 percent acquired by negotiation and 14 percent by condemnation.

Total payments of \$494,172.07 were made in fiscal year 1989 under the Relocation Assistance and Payment Program to help displaced families, business and farm operations relocate. During the fiscal year, 168 relocation claims were processed and paid.

During fiscal year 1989, the division obtained appraisals for 783 parcels. Two separate appraisals were prepared for 7 percent of the parcels involved, making a total of 839 appraisals produced. Each month an average of 65 parcels were appraised, which required an average production of 70 separate appraisals per month. The division's total appraisals also includes 140 damage statements prepared on parcels with an estimated value of \$500 or less.

The sale of improvements located on right of way acquired for highway construction and excess property totaled \$555,821 during fiscal year 1989. And rental of airspace, excess property and property acquired for future construction equaled \$388,129.

the right of way division



s an industry, aviation is a major contributor to the state's economy. As a

transportation mode, it moves millions of Missourians each year. The Transportation Division's aviation section promotes these values through the development of industry, the improvement of airports and the education of local governments and individuals.

Aviation section personnel give information or technical advice to airport sponsors and others who are interested in the establishment, improvement or promotion of aeronautical facilities.

Aviation provides financial assistance to cities, towns, counties or airport authorities in the state through two grant programs. The capital improvement grant program gives financial assistance for planning, construction or expansion to sponsors of publicly owned airports. Funds with this program are granted on a 50 percent

state/50 percent local matching basis.

Under the airport maintenance program, funds may be granted to airport sponsors on a 75 percent state/25 percent local basis for maintenance on runways, taxiways and parking aprons and for emergency repairs or safety-related items. This program's financing is derived from the unrefunded portion of the motor fuel tax that is applied to aviation gasoline.

A portion of the unrefunded fuel tax is used for the annual publishing and distribution of the Missouri Aeronautical Chart and Airport Directory. The aviation section published 12,000 copies of the chart/directory at a cost of \$15,787.

As a result of the Airline
Deregulation Act of 1978, the aviation
section monitors the small community
essential air service program that is
regulated by the U.S. Department of
Transportation. A requirement of the act
is that all actions affecting the air service
to smaller communities must be
coordinated with state aviation agencies.

the transportation division

# transportation continued

During fiscal year 1989, the section performed 190 airport inspections and 187 obstruction evaluations; four objections were filed.

Missouri has 437 airport facilities. These include 362 airports, 71 heliports and four seaplane bases. Of these, 147 facilities are open to the public, and 290 are restricted use. There are 5,874 registered aircraft and 12,341 active pilots in the state. Eight airports provide scheduled air transportation and enplaned about 15 million passengers in the fiscal year.

The aviation section received and processed 44 applications for financial assistance under the airport capital improvement and maintenance programs. The section provided 17 capital improvement grants for a total of \$253,728, and three maintenance grants for a total of \$65,847. The \$253,728 in capital improvement grants generated approximately \$2 million in combined local and federal money. Aviation's capital improvement grant program is an 18-month program. Consequently, data for this report is a combination of fiscal year 1988 and fiscal year 1989 projects.

Third State Economic Development projects were in progress at 11 Missouri airports during fiscal year 1989. A total of \$592,184 was expended for these projects.

The Missouri State Airport System
Plan Update was submitted to the
Federal Aviation Administration (FAA) for
review and approval. The entire plan has

now been computerized.

The Aviation Section is involved with the American Association of State Highway and Transportation Officials (AASHTO) Standing Committee on Aviation, National Association of State Aviation Officials (NASAO) Finance Committee, NASAO Strategic Planning Group, St. Louis-Lambert International Airport Master Plan Technical Advisory Committee, the St. Louis County Heliport Master Plan and the Mid-America Regional Council Helicopter Study. The section also monitors the Scott Air Force Base Joint Use Study.

### Railroads

The railroad section provides, maintains and improves rail transportation within Missouri. The section administers rail planning programs, rail project implementation, the Amtrak 403(b) program and the railroad/highway grade crossing program.

In fiscal year 1989, the rail planning activities program carried out many different items including the following:

\*railroad data collection and tabulation to be included in the next scheduled <u>Rail Plan Update</u>, the analysis of specific light density lines as possible candidates for rail projects;

\*branch line abandonments:

\*the monitoring and implementation of federal rail legislation;

\*the Union Pacific/Missouri-Kansas-Texas Railroad merger:

\*the Denver Rio Grande Western/

The Missouri
Highway and
Transportation
Department
oversees all
modes of travel
in Missouri,
including
railroads.



Southern Pacific acquisition; \*Chicago and North Western Transportation Company's Leveraged Buyout;

\*continuation/expansion of the Local Rail Service Assistance program; and \*other general railroad matters.

The rail project implementation program involved two rail projects. They are as follows.

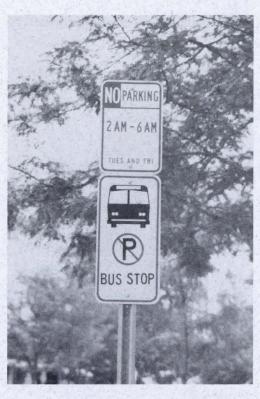
\*21.7 miles, Columbia to Centralia
— A rehabilitation project involving
cross-tie insertion, additional ballast,
surfacing and lining. The project work
was completed during the summer/fall of
1988. An audit is currently in progress.

\*1.6 miles, Scott City Port Access Project — A rail facility construction project that includes the construction of a rail access spur into a river port site in Scott City. Detailed engineering design studies are under way, with construction planned in the fall 1989.

Missouri provides rail passenger service between St. Louis and Kansas City through the Amtrak 403(b) program. The "Ann Rutledge" and the "St. Louis/ Kansas City Mules" trains are funded by a ratio of 65 percent state funding and 35 percent Amtrak funding. During fiscal year 1989, these two trains carried 160,868 passengers.

Efforts to build public awareness included updating the St. Louis-Kansas City route brochure and placing billboards in the Jefferson City area. Radio promotion continued in the Kansas City, St. Louis and Columbia/ Jefferson City markets. One radio promotion focused on the new Amtrak "Thruway" bus connection between Missouri's 403(b) trains at Kansas City and Amtrak's long distance service to Denver and California at Omaha, Neb.

State improvement activities included installing an air conditioning and heating plant at the Kirkwood station. An exterior station sign also was repaired. Early discussions of a plan to renovate the depot at Warrensburg began. Also, a cooperative effort with the city of St. Louis and Amtrak planned construction of a new passenger station in St. Louis.



The department's Transit Section assists in planning and operating Missouri's public transit systems.

Other rail passenger activities included replacing the present Amfleet coach equipment with new Horizon fleet coaches. The Amfleet equipment was 15 years old and needed renovation.

A high-speed rail study was completed in August 1988. The study concluded that truly high-speed rail operated with a dedicated track and signaling system was not feasible at this time. However, the study pointed out that the most cost-effective way to improve existing Amtrak service between St. Louis and Kansas City would be to add a third daily train.

The Transportation Division is the communication link between the department and railroads for projects involving railroad/highway crossings. This responsibility was transferred from the Design Division on July 1, 1988, to improve coordination with the department's other railroad programs.

Grade separation and at-grade crossings form the majority of projects administered by this division. Grade separation projects, such as highway bridges over railroads, involve personnel in several divisions including Planning, Right of Way, Chief Counsel's Office,

transportation continued

# transportation continued

Bridge, Design and Construction.
These divisions' efforts must be coordinated and communicated to the railroad in order to secure timely approval of plans and execution of agreements and easements. The Transportation Division is pursuing 22 projects improving or constructing highways over or under railroads.

The division also coordinates and administers a program to improve atgrade crossings. This fiscal year, the federal government (Section 130) apportioned \$4.1 million to Missouri for improving safety at at-grade crossings. A portion of these funds are to improve warning devices such as flashing light signals, gates and bells at 42 locations. Six of these crossings are on the state highway system while the rest are on city streets or county roads or within special road districts.

### Transit

The transit section assists in the planning, developing and operating of the state's public transit and specialized paratransit systems. The section administers state and federal programs relating to general public transportation and specific programs for the elderly and handicapped.

The Missouri Elderly and Handicapped Transportation Assistance Program provided state financial assistance for 156 nonprofit organizations offering transportation services to the elderly and handicapped at below-cost rates. For fiscal year 1989, program appropriations were \$1,471,755.

The 10 area agencies on aging received \$795,002 in state funds to supplement federal funds for elderly transportation. An additional \$131,853 were available to other groups working with older Missourians. Altogether 60 elderly programs received assistance.

State funds of \$544,900 were available to 96 sheltered workshops, group homes and other handicapped facilities to assist in transportation.

Altogether the department helped subsidize 4,300,000 special

transportation trips. The total cost of these trips was \$9,000,000.

Twenty-eight small urban and rural general public transit systems received financial and technical support from the department. Federal financial assistance is available under Section 18 of the Urban Mass Transportation Act and allocated to the various systems by the department.

The small urban and rural systems had a combined operating budget of \$6,750,000; \$1,985,000 was provided by the department. An additional \$450,000 in federal funds purchased equipment.

The system operated 285 vehicles, logged 6,500,000 miles and provided more than 2,100,000 trips.

The Urban Mass Transportation Act Section 9 provides federal formula capital and operating assistance to transit systems in urban areas of more than 50,000 population. MHTD administers this program for Columbia, Springfield, St. Joseph and Joplin.

In fiscal year 1989, the department approved payment of \$1,950,000 in federal aid to the transit systems in Columbia, Springfield and St. Joseph. These systems operated 46 transit buses and provided 4,500,000 trips.

Capital assistance to nonprofit organizations giving transportation service to the elderly and handicapped is provided by the Urban Mass Transportation Act Section 16(b)(2). In fiscal year 1989, the program provided \$820,000 in federal assistance. This was matched with \$205,000 in local funds for the purchase of 45 vehicles, wheelchair lifts, ramps and similar equipment for 25 elderly and handicapped organizations.

At the end of fiscal year 1989, there were 400 assisted vehicles in service, operated by 145 local organizations that made more than 2,800,000 trips.

The transit unit gave staff support for the statutory Coordinating Council on Special Transportation. This council investigated problems in the delivery of Missouri's special transportation services and recommended solutions to the governor and General Assembly.

# statement of receipts and disbursements for fiscal year 1989

Highway	Receipts	Disbursements	
Basic Revenue:			
Motor Vehicle License	172,064,754.13		
Dept. of Economic Development	2,252,599.77		
Motor Vehicle Use Tax	30,465,969.83		
Drivers License Fees	11,415,921.65		· ·
Motor Vehicle Inspection Fees	2,202,102.75		financial
Motor Fuel Tax Receipts	279,008,330.94		
Vehicle Sales Tax Receipts	59,442,412.56		summary
Sub-Total	556,852,091.63		
Other Revenue:			
Misc. Escrow Fees	1,811,399.67		
Reciprocity Fund Interest	58,699.11		
Road Fund Interest	3,551,495.25		
Other Miscellaneous	10,816,757.34		
Sub-Total	16,238,351.37		
Federal Reimbursement:			
Federal Highway Administration	245,961,636.38		
Corps of Engineers	361,085.20		
Sub-Total	246,322,721.58		
Construction		430,268,397.31	
Maintenance		215,385,493.13	
Administration		56,150,508.59	
Refund of Motor & Aviation Fuel Tax		15,912,563.10	
O.A.S.I.	是是一种是一种	10,934,731.44	
Other State Depts. (From Hwy. Fund)		118,296,003.35	
TOTAL FOR HIGHWAY	819,413,164.58	846,947,696.92	
Transportation			
Administration		932,253.19	
Transit		6,747,232.83	
Rail		2,637,539.74	
Aviation		344,611.96	
Water		296,701.46	
General Revenue Fund	4,128,710.55		
Federal Fund	6,442,340.94		
Transportation Trust Fund	600,428.38		
Aviation Trust Fund	185,070.48		
TOTAL FOR TRANSPORTATION	11,356,550.35	10,958,339.18	
Mississippi River Parkway Commission	8,955.66		
Third State Building Trust Fund	0.00		
Third State Building Fund	608,212.90		
GRAND TOTALS		858,523,204.66	



Prepared and distributed by MHTD's Public Affairs Division Kathryn Nelson, editor

